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ABSTRACT

The data collected for this report can be divided into three segments: a 14-year collection, 1950-51 through 1963-64, on which analyses were performed and the original predictions generated; a six-year follow-up stage, beginning in 1964-65; a twenty-year collection, 1950-51 through 1969-70, from which new predictions were generated; and a follow-up stage beginning in 1969-70. The more current figures are reported in this volume. For each of the 58 libraries surveyed, the following statistics are reported in graph and tabular form: volumes held in the collection, volumes added to the collection money, expended for materials and binding; salaries and wages expenditures, professional staff size, non-professional staff size, total library operating expenditures, and (when available) the total enrollment statistic which is descriptive of the university of which each library is a part is included. Analyses are grouped into three categories: descriptions of the past and predictions of the future of several varieties of "composite" research libraries, the rank or standing of the individual libraries in respect to each of several statistics for the last six years, and the year-by-year intercorrelations among pairs of statistics which describe either the individual library or its parent university. (Author/SJ)

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THE PAST AND LIKELY FUTURE OF 58 RESEARCH LIBRARIES, 1951-1980:

A STATISTICAL STUDY OF GROWTH AND CHANGE

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INTRODUCTION TO THE 1971-72 (NINTH) ISSUE

Graphs in this 1971-72 issue, as in the two preceding years, show two prediction curves: one based upon the 1951-64 data; the other based upon the 1951-70 data. General observations, appropriate background text, and discussion of predictions may be found in any of the first three issues. A discussion of the methods used in determining the new prediction curves may be found at the end of the following section on procedures, page 5.

The Summary Sheet following the Introduction deserves a few brief remarks. It provides a condensed review and comparison of the principal predictions with the statistics of actual library growth during the past three years. From the Summary Sheet the reader may judge generally the success or failure of both the old and new predictions. General impressions can be examined in detail by referring to the appropriate graph among Figures 1 through 28 on pages 15-42.

As in past years, the most precise predictions for the "Average Composite" library have been those for "Volumes Held." The Summary Sheet and Figure 1 show the steady year-by-year actual growth of "Volumes Held" which has continued much as originally predicted. When the first forecasts were made, collections averaged about 1.5 million volumes. Currently, they average a little over 2.15 million.

During the year in which the original predictions were made, 1963-64, "Volumes Added" by the "Average Composite" library approximated 70,000. Generally in years since, there has been a considerable increase in average acquisitions. However, actual "Volumes Added" by the "Average Composite" library in 1969-70 were a little over 107,000; in 1970-71 they were a little under 107,000; and in 1971-72 fell to less than 106,000. Thus, for the second time, actual acquisitions for the "Average Composite" library fell below that of the previous year.

"Total Library Operating Expenditures" statistics for the "Average Composite" library in 1971-72 indicated a more than 14 percent increase of actual over the originally predicted expenditure levels, and generally, the original predictions of the expenditure of funds have been consistently surpassed by

actual expenditures. However, again this year, "Total Library Operating Expenditures" have dropped below the new predicted level although they are still well above the original predicted mark.

Trends from data collected during the past five years generally indicate that "Volumes Held" in the "Average Composite" library are continuing to rise much as predicted while "Volumes Added" show a marked down turn from both the original and the revised predictions. At first glance it would seem logical that the predictions of "Volumes Held" and "Volumes Added" should agree. However, as explained in the Procedures Section, these two predictions are assumed to be statistically independent.

Percentages of variance from predictions, computed for the "Large," "Medium-Large," "Medium-Small," and "Small Composite" groups of libraries, reveal that some developments in these library groups vary widely from the levels originally predicted. The "Large Composite" libraries are 4.5 percent above the original predicted level and 10 percent below the revised predicted level in "Total Library Operating Expenditures" for 1971-72. In "Volumes Added," the same group is 24.5 percent below the original prediction and 17 percent below the revised prediction. Five year trends for "Large Composite" libraries show that actual "Total Library Operating Expenditures" have consistently continued to surpass the originally predicted levels but are falling behind the revision based on 19 years' statistics. On the other hand, actual "Volumes Held" in 1972 exceed the original predicted number by 1.5 percent and the revised prediction by about 0.1 percent.

The "Medium-Large Composite" libraries fall well below the original predicted levels for 1971-72 in both "Volumes Held" and "Volumes Added." They also show a 4.5 percent decline from the "Total Library Operating Expenditures" forecast of the original prediction and a 7 percent decline from the revised prediction. "Volumes Held" are below the predicted levels by 10 and 1.5 percent, while "Volumes Added" have fallen below the predicted levels by 36.5 and 19 percent.

For the "Medium-Small Composite" libraries, on the other hand, actual "Volumes Held" in 1971-72 are 5 percent above the original predicted levels and 0.3 percent above the revision. "Total Library Operating Expenditures"

are almost 27 percent above the original predicted levels but 6 percent below the revised forecast. Actual "Volumes Added" have surpassed original predictions, except in 1971-72, when acquisitions declined in number as compared with those of 1970-71. They have fallen sharply behind (by 23.5 percent) the revised predictions, while "Total Library Operating Expenditures" continue to rise above original predictions by a wide margin, although the latest year shows a decline of more than 6 percent from the predicted value.

The "Small Composite" libraries also continue to show gains over originally predicted levels. Actual "Total Library Operating Expenditures" for 1971-72 are 37 percent more than the originally forecasted amounts, although 9 percent below the revised predictions. "Volumes Added" are still 9 percent and "Volumes Held" are 12.5 percent over levels originally predicted in 1963-64. Compared with the new predictions, "Volumes Added" are off 22 percent and "Volumes Held" are 4 percent off the levels forecast.

For all groups there appears to be a leveling off in "Volumes Added" accompanied by a lessening increase in expenditures over the originally predicted levels.

SUMMARY: SELECTED STATISTICS, PREDICTED AND ACTUAL, OR "COMPOSITE" LIBRARIES, 1970-1972
(Predictions from 1971-72 are based on 21 years data, 1951-1971.)

See Also Figure Number	Statistic See Page 5	Composite See Page 10	1969-1970 Old Predicted	1969-1970 New Predicted	1969-1970 Actual	1970-1971 Old Predicted	1970-1971 New Predicted	1970-1971 Actual	1971-1972 Old Predicted	1971-1972 New Predicted	1971-1972 Actual
1	Volumes Held	Average (Mean)	1929475	2019573	1998632	2010779	2116372	2079093	2094800	2217019	2156618
2	Volumes Added	Average (Mean)	113680	114643	107024	122822	123635	106778	132471	133107	104424
3	Total Library Operating Expenditures	Average (Mean)	2604871	3164544	3268594	2833313	3494122	3439578	3073405	3842958	3586033
4	Materials & Binding Expenditures	Average (Mean)	958624	1126178	1153784	1051002	1248088	1160762	1148394	1377205	1117320
5	Professional Staff Size (FTE)	Average (Mean)	84.3	90.1	86.8	88.6	95.4	86.1	93.1	100.8	86.5
6	Volumes Held	Median	1488229	1464150	1476248	1558441	1530908	1559958	1631082	1598874	1638256
7	Volumes Added	Median	97648	98752	94314	105225	106315	96770	113205	114270	90124
8	Total Library Operating Expenditures	Median	2083133	2586616	2738877	2262971	2857221	2921247	2451677	3143516	3150626
9	Materials & Binding Expenditures	Median	805654	989209	1051471	880903	1097918	1099197	960089	1213035	1042842
10	Professional Staff Size (FTE)	Median	71.0	76.0	73.0	75.0	80.0	73.0	79.1	85.5	74.0
11	Volumes Held	First Quartile	1067422	1149422	1191218	1108027	1238750	1178985	1149330	1308439	1216049
12	Volumes Added	First Quartile	72560	71702	63958	78721	75678	67127	85219	81396	63092
13	Total Library Operating Expenditures	First Quartile	1579075	1993156	2108122	1726925	2219192	2251759	1882611	2459092	2168581
14	Volumes Held	Third Quartile	2132432	2374557	2289708	2217515	2502054	2417024	2304973	2635055	2517796
15	Volumes Added	Third Quartile	125380	140253	133497	134472	151679	130801	144045	163748	129638
16	Total Library Operating Expenditures	Third Quartile	3346209	3884368	3753657	3655405	4289555	4068426	3981008	4718309	4425897
17	Volumes Held	Large	3782082	3830693	3839558	3926167	3983038	3996387	4075118	4140848	4144940
18	Volumes Added	Large	199332	183244	176846	215644	196374	172844	232652	210159	174412
19	Total Library Operating Expenditures	Large	4793813	5454042	5577370	5207614	5986690	5781460	5642512	6549358	5886940
20	Volumes Held	Medium-Large	1986219	1833132	1847013	2598262	1919550	1903873	2215130	2008362	1994182
21	Volumes Added	Medium-Large	131477	106580	96310	143602	113966	95786	156434	121693	98982
22	Total Library Operating Expenditures	Medium-Large	2644799	2769385	2847091	2896198	3042058	3112289	3161101	3329786	3099873
23	Volumes Held	Medium-Small	1261678	1305840	1334784	1314040	1366773	1405940	1367832	1428910	1434110
24	Volumes Added	Medium-Small	75603	85934	83156	80737	92709	84441	86145	99874	76514
25	Total Library Operating Expenditures	Medium-Small	1790340	2310222	2392980	1944984	2561877	2507226	2107260	2828594	2667261
26	Volumes Held	Small	903787	1029064	1031420	947134	1094165	1070768	992001	1162385	1116452
27	Volumes Added	Small	59120	79161	74254	63615	86954	76423	68346	95216	74315
28	Total Library Operating Expenditures	Small	1553025	2234313	2349587	1698292	2502435	2447311	1851344	2787574	2541838

PROCEDURES

The data collected for this report can be divided into three segments: (a) a 14-year collection, 1950-51 through 1963-64, on which analyses were performed and the original predictions generated; (b) a six-year "follow-up" stage, beginning in 1964-65; (c) a 20-year collection, 1950-51 through 1969-70, from which new predictions were generated; and (d) a "follow-up" stage, beginning in 1969-70. A detailed discussion of the statistics computed from the 14-year collection can be found in the first three issues (i.e., 1965, 1966, or 1967) of this report, and in general, the same computations have been performed on the more recent data. It is in presenting the more current figures that the contribution of this issue lies, and, although earlier data are reported also, the focus will be on new information.

For continuity, the sample of libraries studied remains the same as in earlier issues. These libraries are listed on page 7. For each of the 58 libraries surveyed, the following statistics were obtained: (1) volumes held in the collection; (2) volumes added to the collection; (3) money expended for materials and binding; (4) salaries and wages expenditures; (5) professional staff size; (6) non-professional staff size; (7) total library operating expenditures. In addition, and when available (8) the total enrollment statistic is included, which is descriptive of the university of which each library is a part. Two additional statistics were reported from 1950-51 through 1964-65: (9) reported graduate student enrollment and (10) number of Ph.D. degrees granted. A third statistic was reported from 1950-51 through 1968-69: (11) lowest professional salary paid.*

When omissions largely had been removed from the data, either by reference to alternative publications or by calculation, a further problem remained, namely, the accuracy or plausibility of the data, regardless of source.

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*The data on which this study is based are now contained in an IBM card deck consisting of 1276 cards (each card represents one of the 58 libraries and one of the 22 years). Since the present study has only analyzed these data partially and since other investigators may wish to execute further analyses which relate to their unique interests, this card deck will be made available at cost to those requesting it.

There were several means by which inaccuracies or inconsistencies could be carried into the study's initial data. They could stem from varying interpretations placed on instructions originally given to each reporting library, in which case little could be done to remove them. In addition, inaccuracies could arise during the transcription and publication of the statistical reports or during the calculations of values to serve in lieu of missing data. In an attempt to locate inaccuracies or inconsistencies within the data, simple computer procedures were developed which compared each library's reported figures for each pair of adjacent years. These procedures revealed, for example, each library's annual growth (or decline) in professional staff size, in total library operating expenditures, in expenditures for acquisitions, etc. With a slight modification, these procedures also revealed the difference, if any, between the net acquisitions (as determined by subtracting "Volumes Held" for one year from "Volumes Held" for the next succeeding year) and the gross acquisitions ("Volumes Added") for each year. By means of these procedures, several publishing or reporting errors were located and corrected for the (Seventh) issue of 1969-70. Several inconsistencies in reporting also appeared, some of which seemed to reflect a library's decision during one year to include previously unreported volumes (perhaps on microfilm), then a later decision to revert to the counting procedure which ignored these same volumes. In the current issue similar problems were encountered in data accuracy or plausibility. However, no attempt was made to equate or correct these publishing or reporting "errors."

Again, as in earlier issues, analyses are grouped into three major categories: (1) descriptions of the past and predictions of the future of several varieties of "composite" ARL libraries, (2) the rank or standing of the individual libraries in respect to each of several statistics for the last six years, and (3) the year-by-year intercorrelations among pairs of statistics which describe either the individual library or its parent university (e.g., the correlation between "Volumes Held" and "Total Library Operating Expenditures," "Volumes Added," and "Professional Staff Size.")

In preparing descriptive data for the past and the predicted future of ARL libraries, several forms of analysis were employed. Initially, the data were used to calculate an annual average figure for each of the statistics and, thus, to create a "composite" library. Then using curve fitting procedures (see, e.g., J. P. Guilford's Psychometric Methods, second ed., pp. 70-71), several of these statistics were extrapolated to 1980, producing predictions of annual average figures for the years beyond 1964. In this issue actual or realized values for the years since 1964 are provided in Figures 1-28 as a check on these predictions.

Since the annual average figures for all ARL libraries are substantially influenced by the size of a few extremely large libraries, particularly Harvard, Yale, Illinois, and some others with current holdings near or well beyond three million volumes, these averages do not reflect a thoroughly typical state of affairs. Because of this, additional composites were thought necessary and were developed. To accomplish this, the 1962-63 figures for "Volumes Held" were used to divide the 58 libraries into four subgroups. The 58 libraries were ranked according to their 1962-63 "Volumes Held" figures and were then divided into groups of 14 "large," 15 "medium-large," 15 "medium-small," and 14 "small" libraries.* For each of these groups, a composite was calculated by means of the same procedures used in calculating the over-all average composite library, as described above. Also, the predicted future of each group composite was extrapolated to 1980 by means of the curve fitting procedures previously mentioned.

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*The 14 "large" libraries are California, Berkeley; California, Los Angeles; Chicago; Columbia; Cornell; Harvard; Illinois; Indiana; Michigan; Minnesota; Pennsylvania; Princeton; Stanford; and Yale.

The 15 "medium-large" libraries are Brown; Duke; Iowa; Johns Hopkins; Louisiana State; Missouri; New York; North Carolina; Northwestern; Ohio State; Texas; Utah; Virginia; Washington, Seattle; and Wisconsin.

The 15 "medium-small" libraries are Southern California; Cincinnati; Colorado; Florida; Joint; Kansas; Kentucky; Massachusetts Institute of Technology; Michigan State; Oklahoma; Oregon; Pittsburgh; Rutgers; Washington (St. Louis); and Wayne.

The 14 "small" libraries are Boston; Florida State; Iowa State; Maryland; Nebraska; Notre Dame; Pennsylvania State; Purdue; Rochester; Syracuse; Temple; Tennessee; Texas A & M; and Washington State.

A further set of analyses, similar to those just described, provided year-by-year descriptive data for three additional composite libraries: the median library (Mdn), the third quartile library (Q_3), and the first quartile library (Q_1). The median composite library's statistics are such that it consistently ranks midway between the 29th and 30th rank of the 58 libraries, i.e., the characteristics of this hypothetical library fall always at the 50th percentile, when all 58 libraries are successively ranked each year for each of the statistics graphed. Similarly, the third quartile composite has characteristics which place it at the 75th percentile in the annual rankings of each statistic, while the first quartile composite falls consistently at the 25th percentile. The characteristics of the Mdn, Q_3, and Q_1 composites have also been extrapolated to 1980 by means of curve fitting.

The second set of analyses consists of annual rankings of the 58 libraries on the basis of several descriptive statistics. For each of the last five years, the libraries were ranked in terms of "Volumes Held," "Volumes Added," and "Total Library Operating Expenditures" statistics. As presented in Tables 20 through 22 of this report, these rankings essentially show the competitive positions of the individual libraries.

The last or the major analyses is a year-by-year correlational analysis of all possible pairs of the ten annually reported statistics. These employ Pearson product-moment correlations (see, e.g., Helen M. Walker and Joseph Lev's Statistical Inference, p. 233ff.). For these analyses, each ARL library is treated as an "individual" and its reported statistics for a given year are treated as its scores. Intercorrelations based on 20 years of data are reported.

Again this year, two prediction curves are shown in Figures 1-28. New curves based on 21 years data were determined in the same manner as the originals (i.e., both curves are parabolas that best fit the data). These calculations were made with subroutine LSTSQ from the Purdue University Computing Center's statistical library.

Since the original curves were fitted with manual calculations, the opportunity to check the original calculations was capitalized upon in connection with the issue for 1969-70. This checking procedure revealed

the following errors: (1) The prediction curve for "Volumes Held" by the Medium-Small Composite ARL library was originally reported as $\hat{Y} = 1342.64x^2 + 15624.14x + 530032.82$. This curve should have been reported as $\hat{Y} = 715.55x^2 + 230023.80x + 514982.65$. This error was due to the fact that the original curves used 1,053,502 for the realized level of "Volumes Held" in 1964. This was later corrected to 983,268. This correction, however, was never reflected as a change in the prediction curve. (2) The prediction curve for "Volumes Added" for the Medium-Small Composite ARL library was originally reported as $\hat{Y} = 168.84x^2 - 857.98x + 31216.37$. This curve should have been reported as $\hat{Y} = 136.98x^2 - 482.06x + 30451.83$. This error was due to the fact that the original curve used 53,522 as the realized level of "Volumes Added" in 1964. This was later converted to 49,954. Again, this alteration was not reflected as a change in the prediction curve. (3) A similar change was made in the "Materials and Binding Expenditures" of the Median Composite ARL library. The figure for 1963 was originally reported as 394,554. This was corrected in the fourth issue to report 366,508. This changed the equation of the parabola from $\hat{Y} = 2073.92x^2 - 5598.60x + 117411.32$ to $\hat{Y} = 1939.09x^2 - 4254.09x + 115099.81$. (4) There was also a minor error in the calculation of the prediction curve for the "Total Library Operating Expenditures" of the Large Composite ARL library. The original curve was $\hat{Y} = 10548.75x^2 - 18697.92x + 948271.74$. The correct curve should be $\hat{Y} = 10543.81x^2 - 18621.78x + 948123.36$. (5) The original prediction curves were incorrect due to a transposition error in the original calculations. The prediction curve should have been $\hat{Y} = 349.00x^2 + 26295.53x + 401911.88$. Realistically, the "Volumes Held" prediction curve is a dependent function of the "Volumes Added" prediction curve. However, to reflect this fact it would necessitate that one of the curves be something other than parabolic. Thus, originally, the two prediction curves were assumed to be statistically independent, and this assumption has been continued through the current issue.

RESULTS

Summaries of the Past and Predicted Future

To summarize the descriptive statistics for the years 1950-51 through 1971-72 and to project these descriptions into the future, eight composite types of libraries will be described. These eight library types were briefly mentioned in the preceding section of the report. They are more fully identified below.

The Names, Code Names, and Distinctive Features of Eight Composite Libraries

Name	Code Name	Distinctive Features
Average	AV	Each descriptive characteristic for all 58 libraries was averaged for each year, 1950-51 through 1971-72. This composite library is composed of the average values calculated for each year.
Median	Mdn	For each descriptive statistic, each year, the 58 libraries were rank-ordered, from largest to smallest. This composite library consists of statistics which would rank this library midway between the 29th and 30th rank on each statistic; it is a hypothetical 50th percentile library.
First Quartile	Q_1	By using the same ranking information employed in preparing the Median (Mdn) composite library, the Q_1 composite was also prepared. This composite has descriptive statistics which consistently give it rank at the 25th percentile in each ranking of the 58 libraries.
Third Quartile	Q_3	As with the Mdn and Q_1 composite libraries, this composite, the Q_3, is based on rankings. Its descriptive statistics are such that it will consistently fall at the 75th percentile in each ranking of the 58 libraries.

Large	Lge	In preparing the description of this library (and each of the following three libraries), the reported collection sizes for 1962-63 were first used to identify the 14 libraries with the largest collections. Then, the average characteristics for these 14 libraries were calculated for each year, 1950-51 through 1971-72.
Medium-Large	M-Lge	This composite library was prepared in essentially the same way as the Large Composite library, except that it is based on averages calculated for the 15 libraries with 1962-63 collection sizes which were just smaller than the collections of the 14 largest libraries.
Medium-Small	M-Sml	This composite follows next in line after the M-Lge composite above. It is based on averages derived from the 15 libraries whose collections in 1962-63 were just smaller than the collections of the libraries in the M-Lge group.
Small	Sml	This, the last of the composites, is based on averages derived from the 14 libraries which had the smallest collections in 1962-63.

Tables 1 through 8 summarize the descriptive statistics of the eight composite libraries for the past five years; the tables present the composites in the same order of appearance as above. In reviewing these tables, it should be particularly recalled that the Average Composite is noticeably affected by the very large size of a few ARL libraries. Thus, although the characteristics of the Average Composite are average arithmetically, they are larger than "typical;" the more typical composite library is the Median.

Many of the same data which serve to describe the composite libraries for the years 1951-64 were used in preparing fitted curves from which predictions of future levels could be made. Before attempting to fit curves to the data, inspection indicated, as expected, that annual growth (e.g., in "Volumes Added" for the Average Composite library) clearly was not linear; any attempt to fit straight lines would result in poor correspondence between actual figures and a straight line's hypothetical figures. The plan adopted was to determine the equation for the parabola which conformed best to the

previous annual levels of each statistic, then to predict future levels of each statistic from the "best fitting" parabola. This same method was used in generating the new prediction curves, and, as with the original predictions, "Volumes Held" and "Volumes Added" are assumed to be statistically independent.

Collections, acquisitions, expenditures, etc., which are ten, twenty, or fifty times the present levels cannot be seriously envisioned for the foreseeable future and some of the fitted curves, when extended some years beyond 1980, indicate inconceivably high levels, thus there is some basis for expecting some deceleration of library growth. Although there has been continuous growth since 1951, including some of the most recent years, library growth currently is faltering.

Projections of the principal statistics for each composite library are presented in Figures 1 through 28. Each figure deals either with the "Volumes Held," "Volumes Added," "Total Library Operating Expenditures," "Professional Staff Size," or "Materials and Binding Expenditures" statistics of one composite library. Each figure presents actual levels of "Volumes Held" (or "Volumes Added, "Total Library Operating Expenditures," etc.) in the form of black dots for the years 1950-51 through 1963-64 or solid triangles for the years 1964-65 through 1971-72 alongside the corresponding levels derived from the best fitting parabola. The parabolas are extended to show predicted levels for the years from 1964-65 through 1979-80.

Correlations Among the Descriptive Statistics

Correlations among pairs of annually reported statistics for the 14 years represented in Table 9 are of some interest, yet they provide few unexpected results. Principally these correlations serve to show that suspected relationships are present; "Materials and Binding Expenditures," for example, correlates .89 to .96 with "Total Library Operating Expenditures," as might be expected, since "Materials and Binding Expenditures" is part of and dependent upon "Total Library Operating Expenditures." The correlations also show a relatively weak relationship between "Volumes Held" and "Total Enrollment," with the correlation centering around .18, and they show a

greater, but still relatively weak relationship between "Volumes Held" and "Graduate Enrollment." Throughout the 14 years, the correlation figure between "Volumes Held" and "Graduate Enrollment" varies between .24 and .44, centering around .37. Within Table 9, three correlation coefficients are shown for each pair of variables. In each set of three, the upper entry is the highest annual coefficient, the middle entry is the median coefficient, and the lower entry is the lowest annual coefficient.

Since Table 9 provides only a summary of the 1951-64 correlations between pairs of variables and since some of the characteristics of these relationships are not apparent in that summary, Tables 10-17 have been prepared. Each of these tables presents the correlations between one variable and each of the other variables, for each of 21 years. Within these tables, it is possible to identify some relationships which are highly stable. Other pairs of variables have produced annual correlations which vary irregularly across the years, with no apparent pattern in these variations.

Some Further Analyses

In addition to the analyses already reported, others also help to indicate more fully the characteristics of research libraries and the contexts within which they function. It must be recognized, for example, that university enrollments, both at the undergraduate and the graduate levels have been increasing steadily. Even though undergraduate enrollments bear slight relationship to the size or other features of research libraries, the size of the graduate program is clearly related. Work was, therefore, undertaken to trace the growth of enrollments and the awarding of doctorates since 1950-51. This work was discontinued in 1964-65.

Another analysis calculates the unit cost of library acquisitions. To determine these, "Volumes Added" were divided into "Materials and Binding Expenditures" figures for each year. Representative results, as determined for the Average, Median, and the Large to Small Composite libraries are shown in Table 18. Since gifts and volumes received by exchange are included in "Volumes Added," the resulting average unit cost does not truly reflect the average unit cost of volumes purchased.

The last of the secondary analyses consists of the percent annual increase in "Volumes Held" for the period covered by the study's data. These figures, as determined for the Average, Median, plus the Large to Small Composites, are shown for the latest five-year period in Table 19.

Annual Ranks of the 58 ARL Libraries

Each year, the 58 libraries have been ranked on three descriptive statistics: "Volumes Held," "Volumes Added," and "Total Library Operating Expenditures." These data for the past five years are given in Tables 20-22. One point should be especially remembered when examining Tables 20-22, which is that institutions in or near the middle ranks are more subject to rank shifts, since several institutions in the middle ranks will in each year have highly similar "Volumes Held," "Volumes Added," or "Total Library Operating Expenditures" figures. In other words, the differences between institutions for a given statistic are small relative to the reported values for "Volumes Held," "Volumes Added," and "Total Library Operating Expenditures." Thus, a fairly modest change in expenditures, for example, may be enough to shift a given library a few ranks up or down. Conversely, at the extreme ends of the ranks, the addition or loss of ten thousand dollars in "Total Library Operating Expenditures" is far less likely to have any observable effect on a library's rank. Here, the differences are very large relative to the values reported. In the top few ranks of "Volumes Held," even the addition or loss of one hundred thousand volumes is of no particular significance, since far greater numbers separate each of the first four libraries from its neighbors.

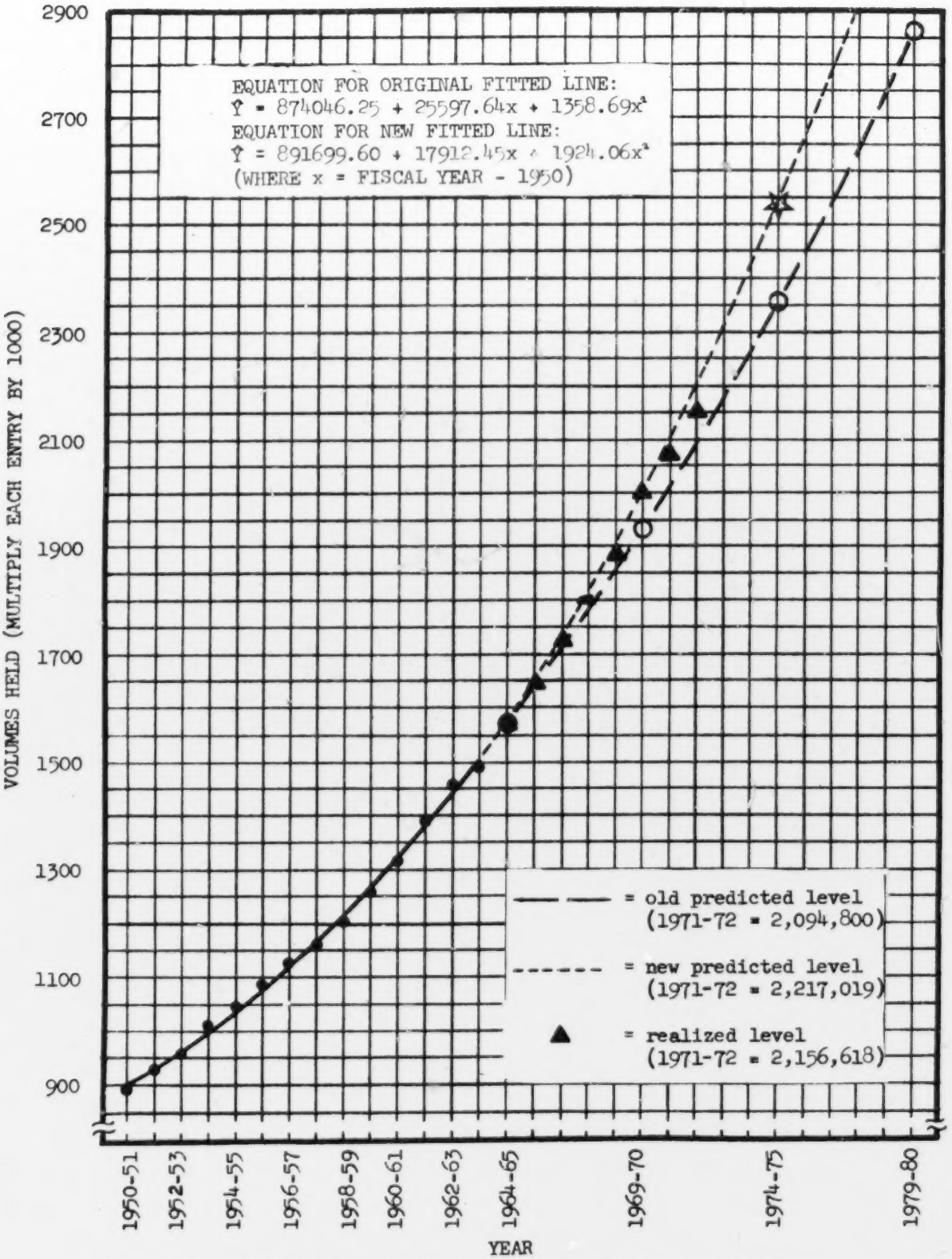

Figure 1. The Past and Predicted Future of Volumes Held in the Average Composite ARL Library, 1951-1980.

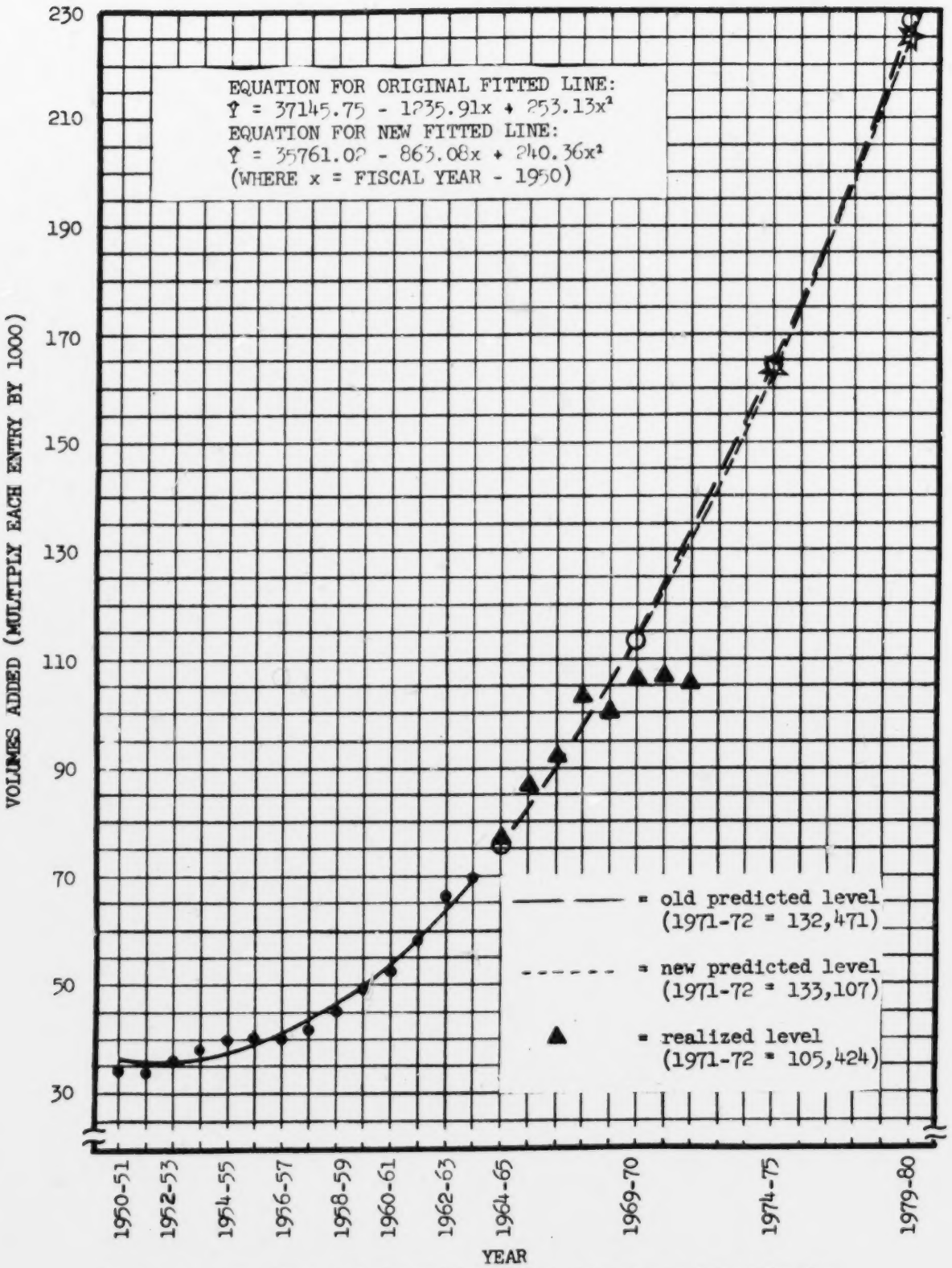

Figure 2. The Past and Predicted Future of Volumes Added in the Average Composite ARL Library, 1951-1980.

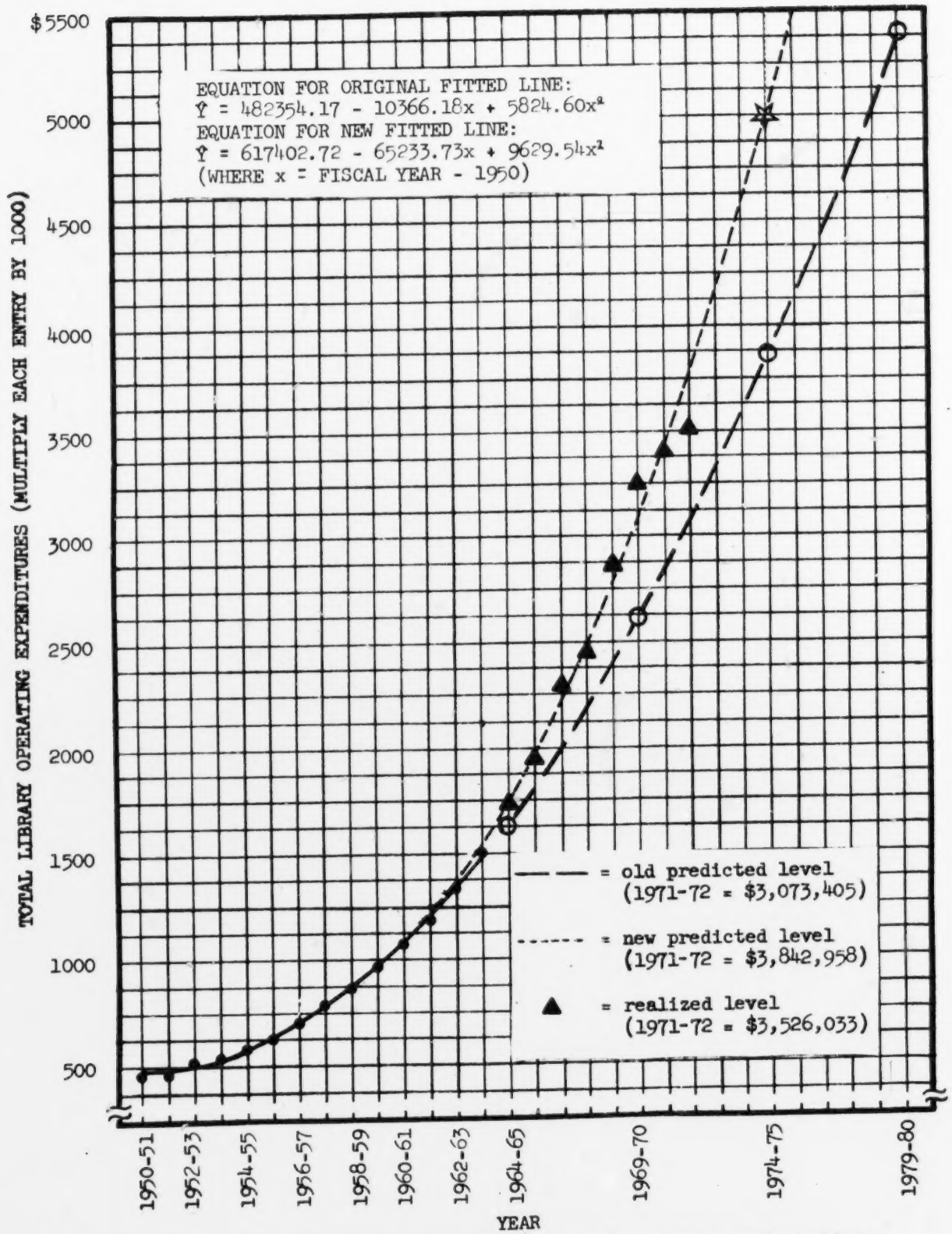

Figure 3. The Past and Predicted Future of Total Library Operating Expenditures in the Average Composite ARL Library, 1951-1980.

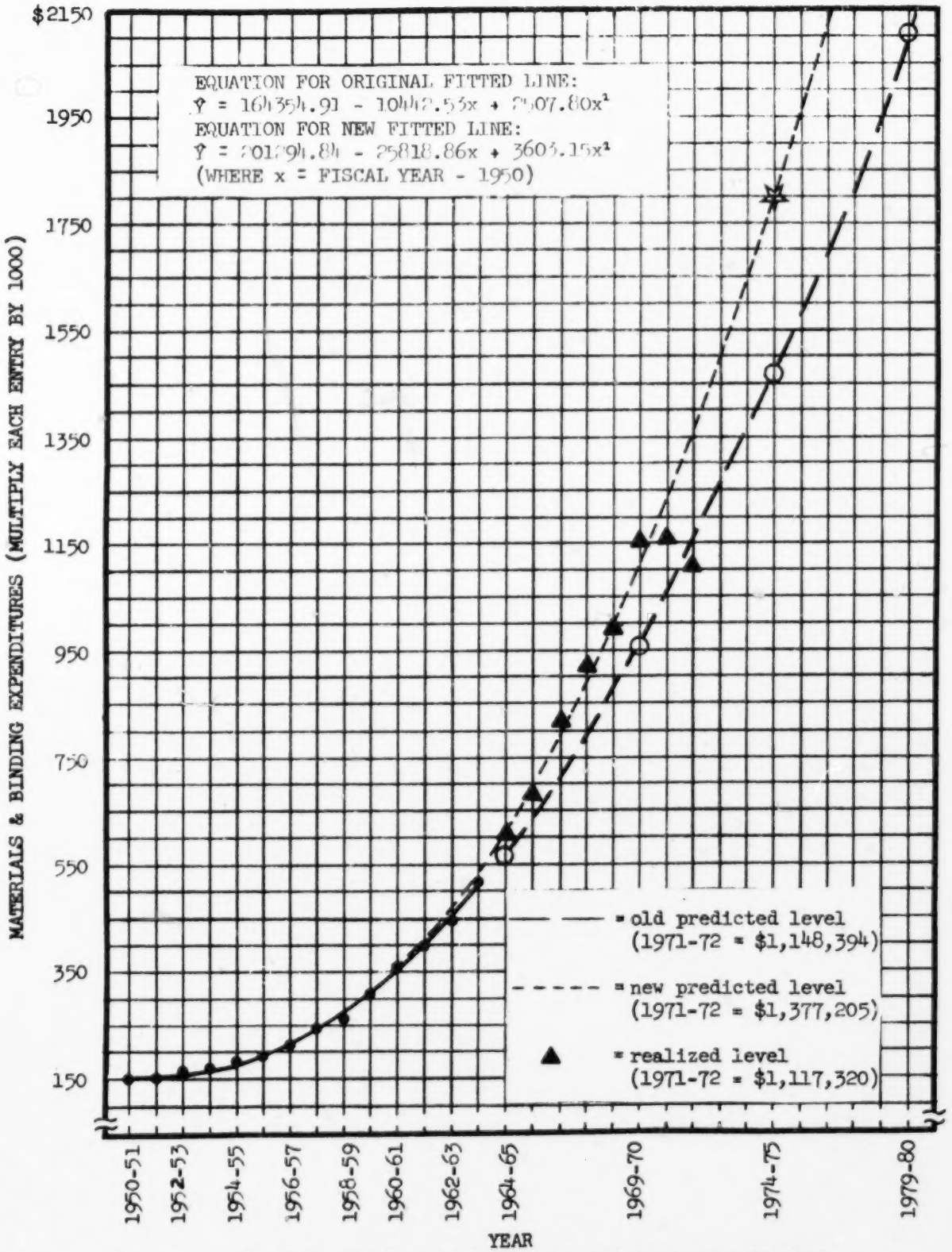

Figure 4. The Past and Predicted Future of Materials & Binding Expenditures in the Average Composite ARL Library, 1951-1980.

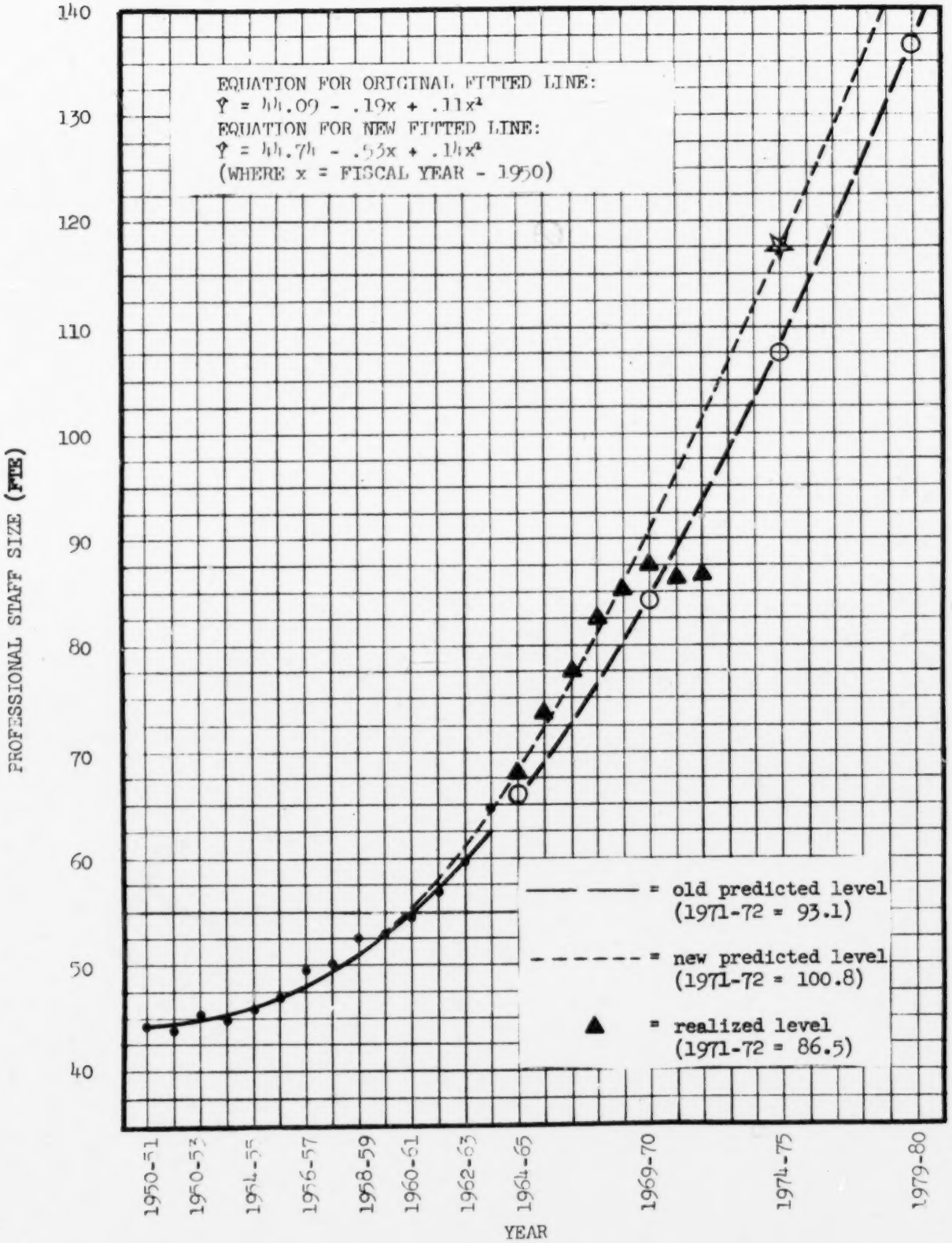

Figure 5. The Past and Predicted Future of Professional Staff Size (FTE) in the Average Composite ARL Library, 1951-1980.

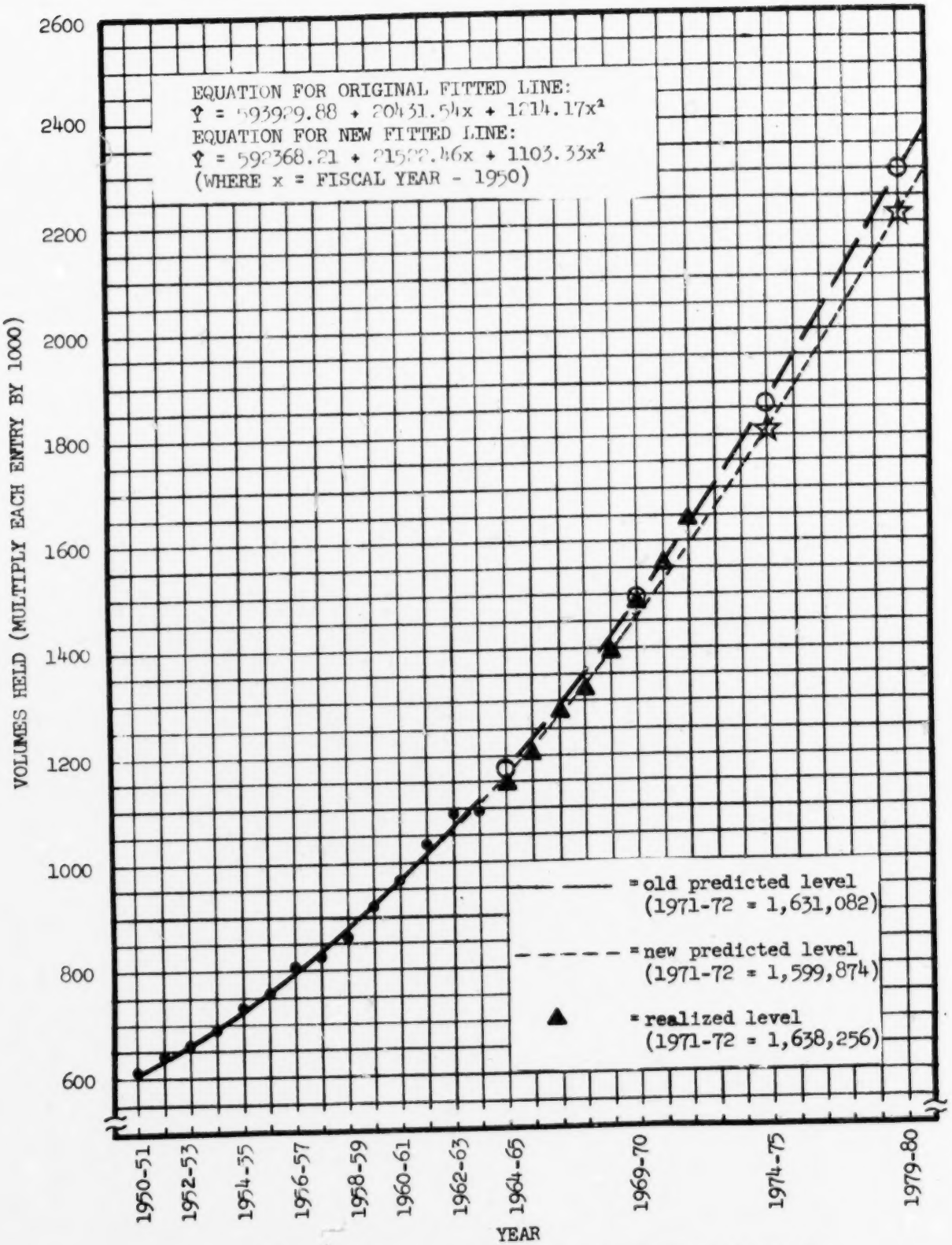

Figure 6. The Past and Predicted Future of Volumes Held in the Median Composite ARL Library, 1951-1980.

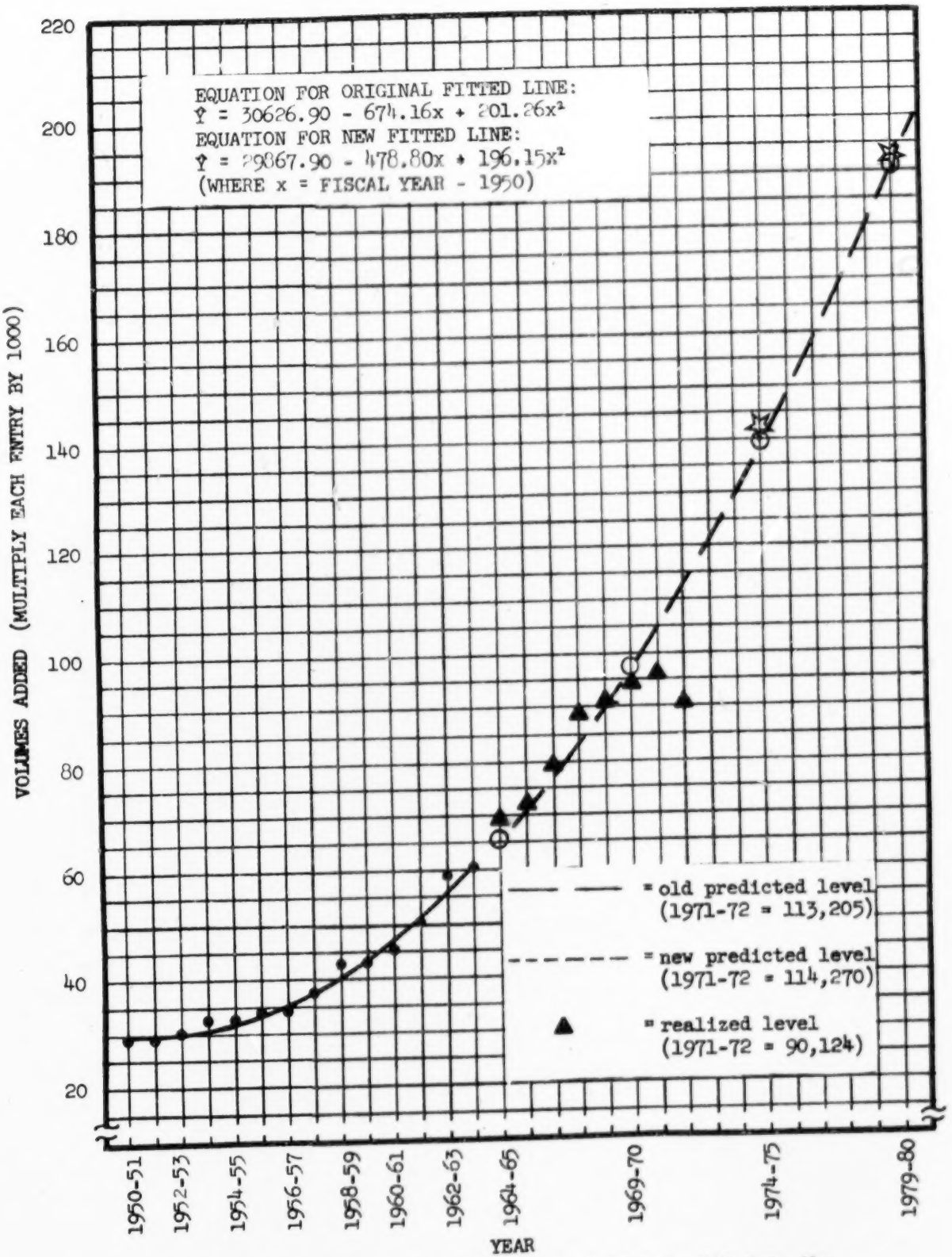

Figure 7. The Past and Predicted Future of Volumes Added in the Median Composite ARL Library, 1951-1980.

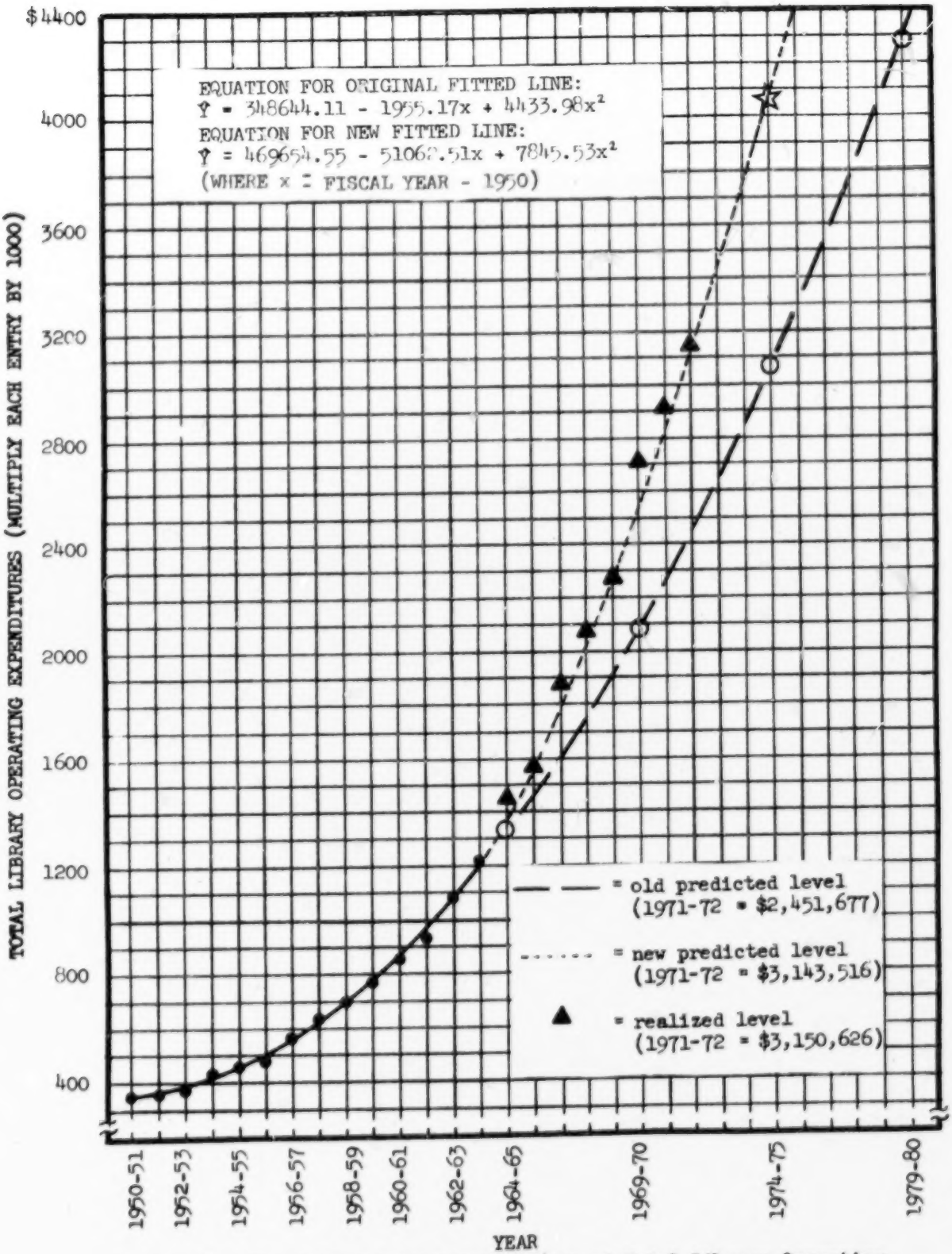

Figure 8. The Past and Predicted Future of Total Library Operating Expenditures in the Median Composite ARL Library, 1951-1980.

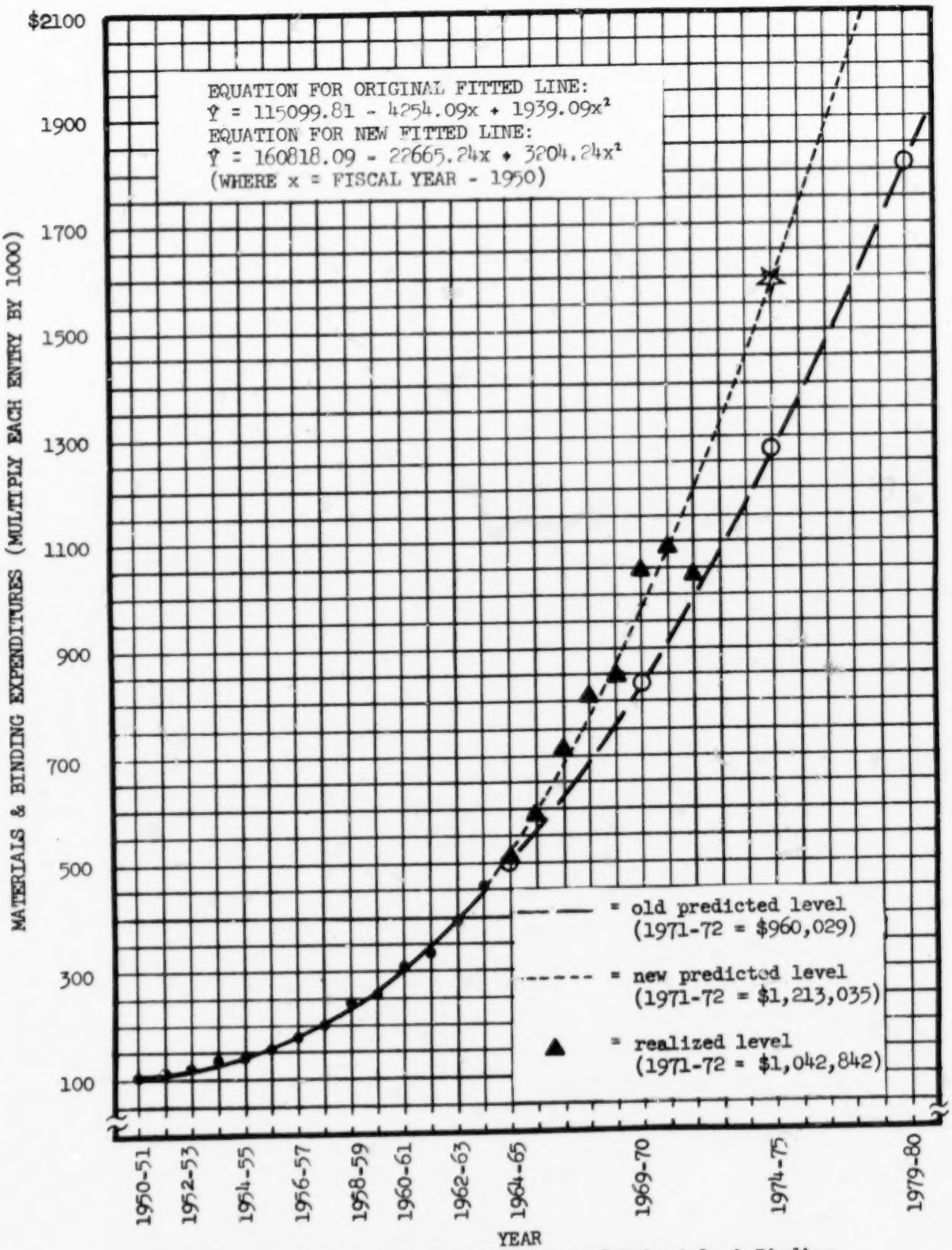

Figure 9. The Past and Predicted Future of Materials & Binding Expenditures in the Median Composite ARL Library, 1951-1980.

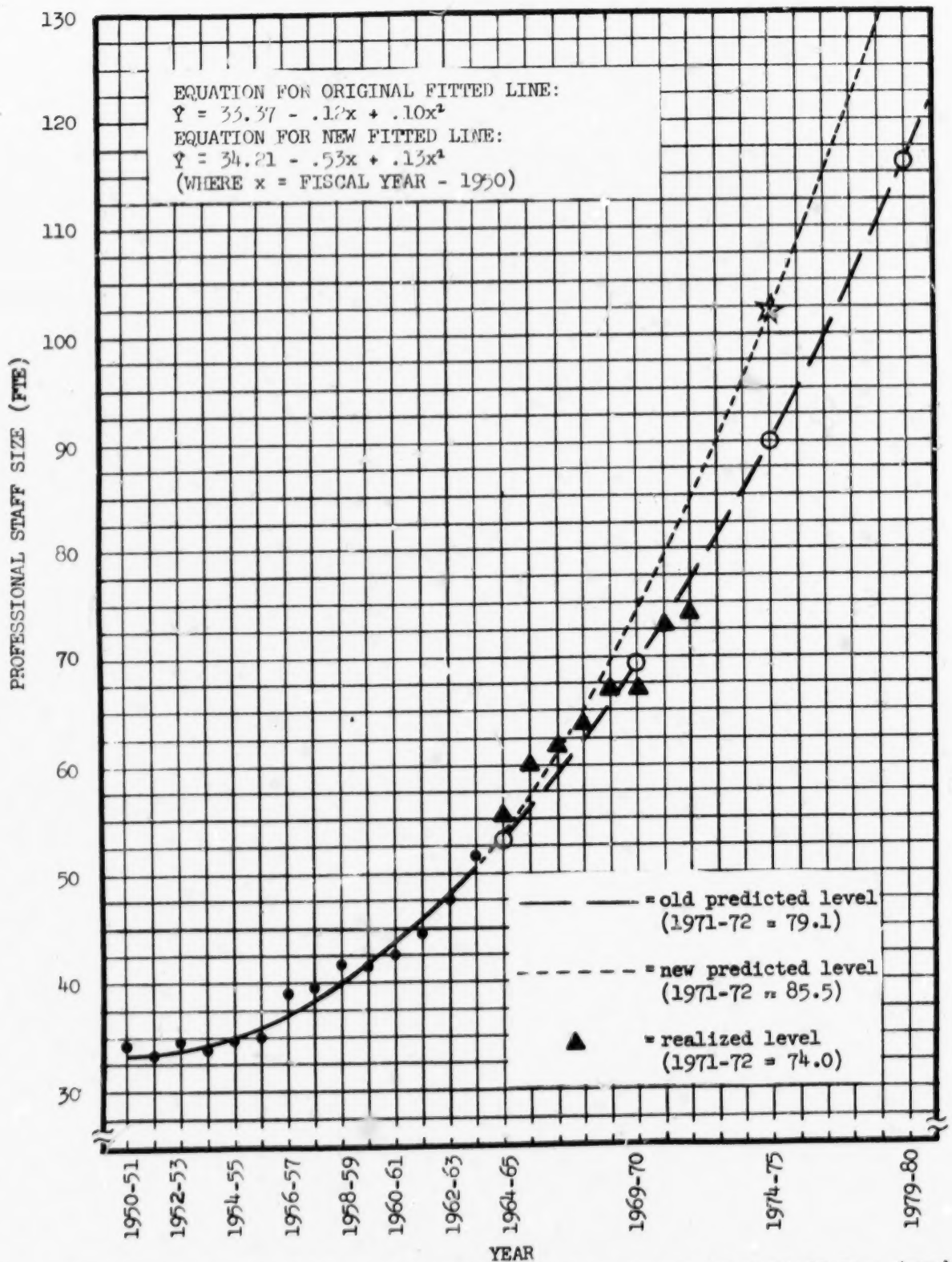

Figure 10. The Past and Predicted Future of Professional Staff Size (FTE) in the Median Composite ARL Library, 1951-1980.

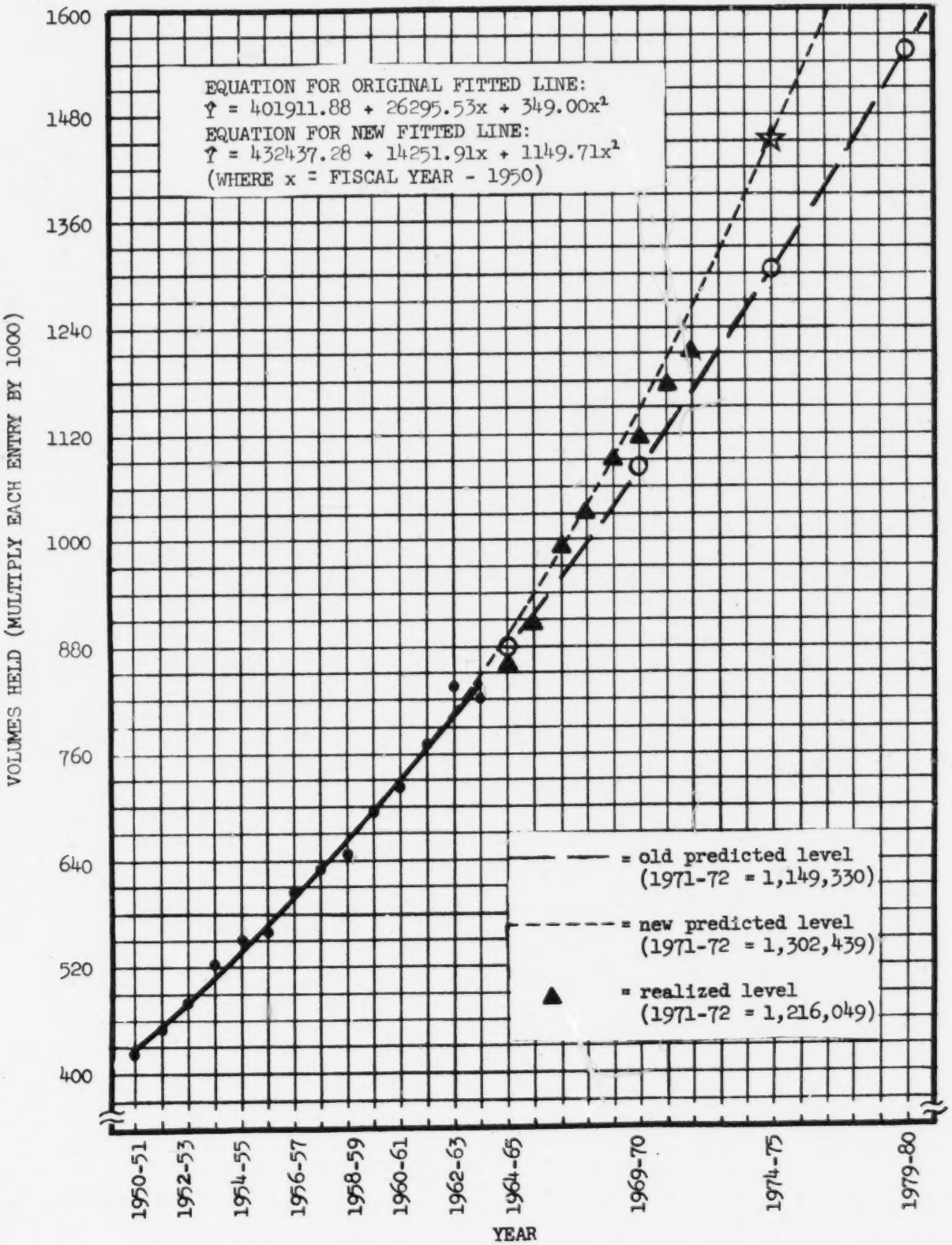

Figure 11. The Past and Predicted Future of Volumes Held in the First Quartile Composite ARL Library, 1951-1980.

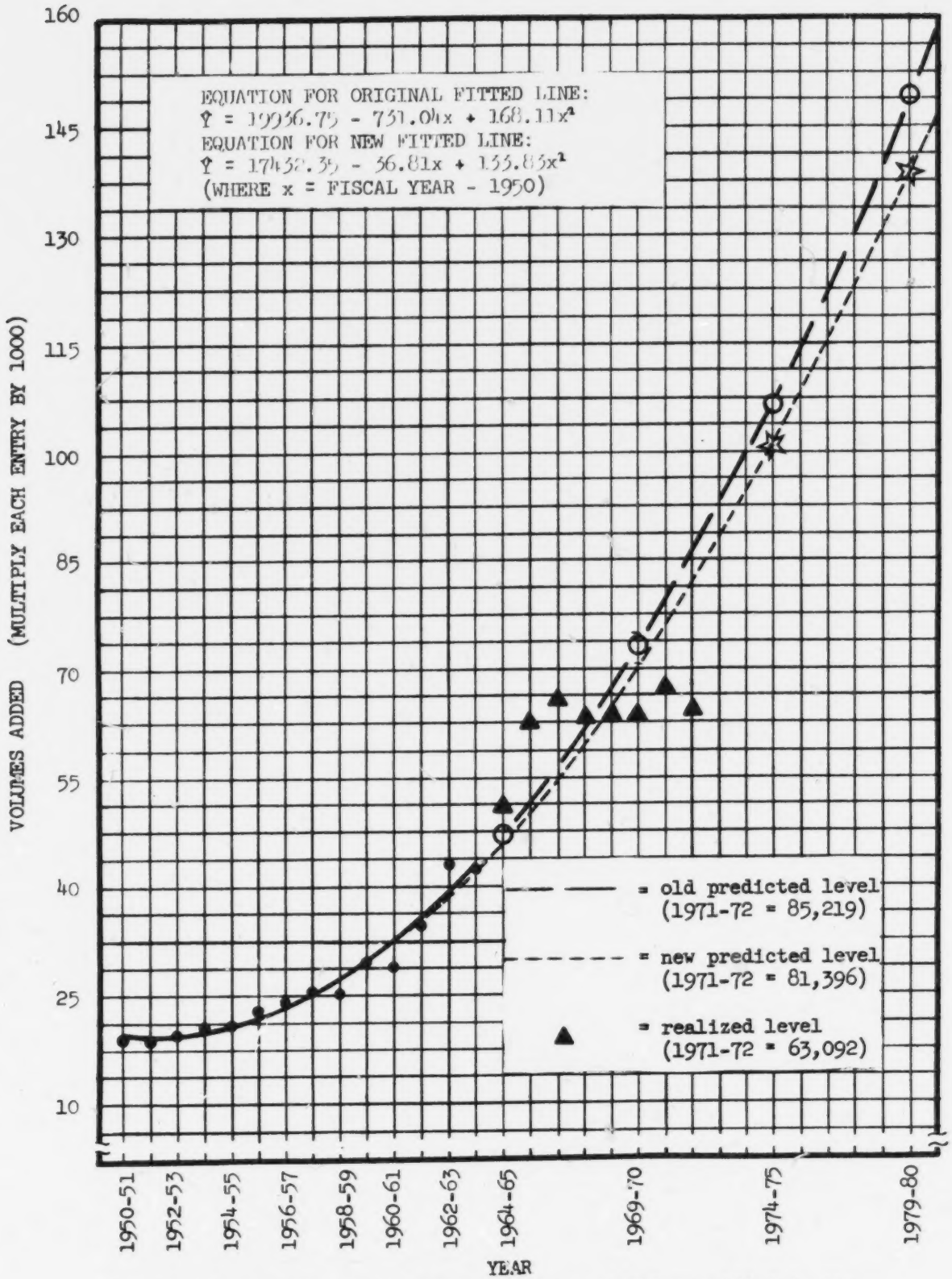

Figure 12. The Past and Predicted Future of Volumes Added in the First Quartile Composite ARL Library, 1951-1980.

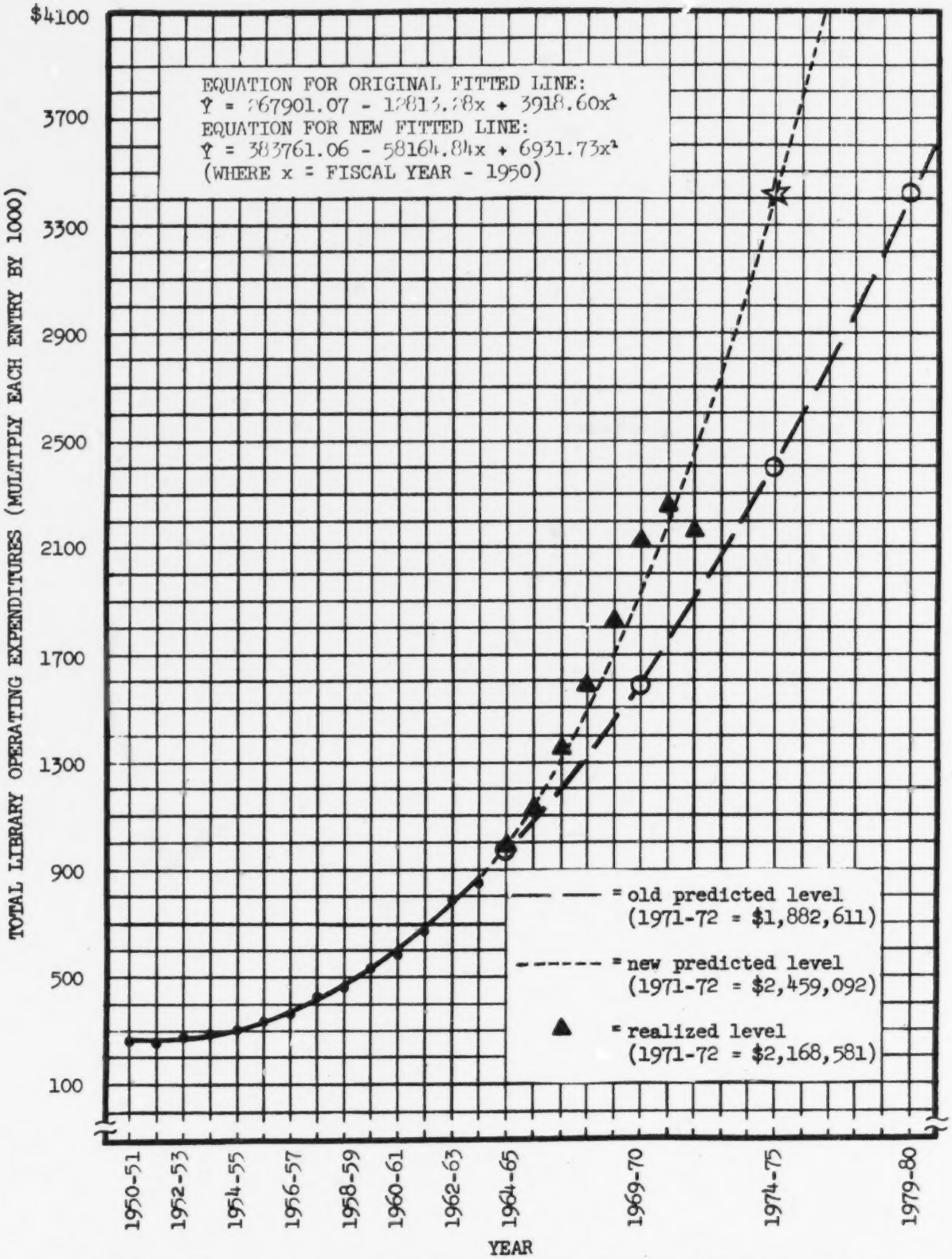

Figure 13. The Past and Predicted Future of Total Library Operating Expenditures in the First Quartile Composite ARL Library, 1951-1980.

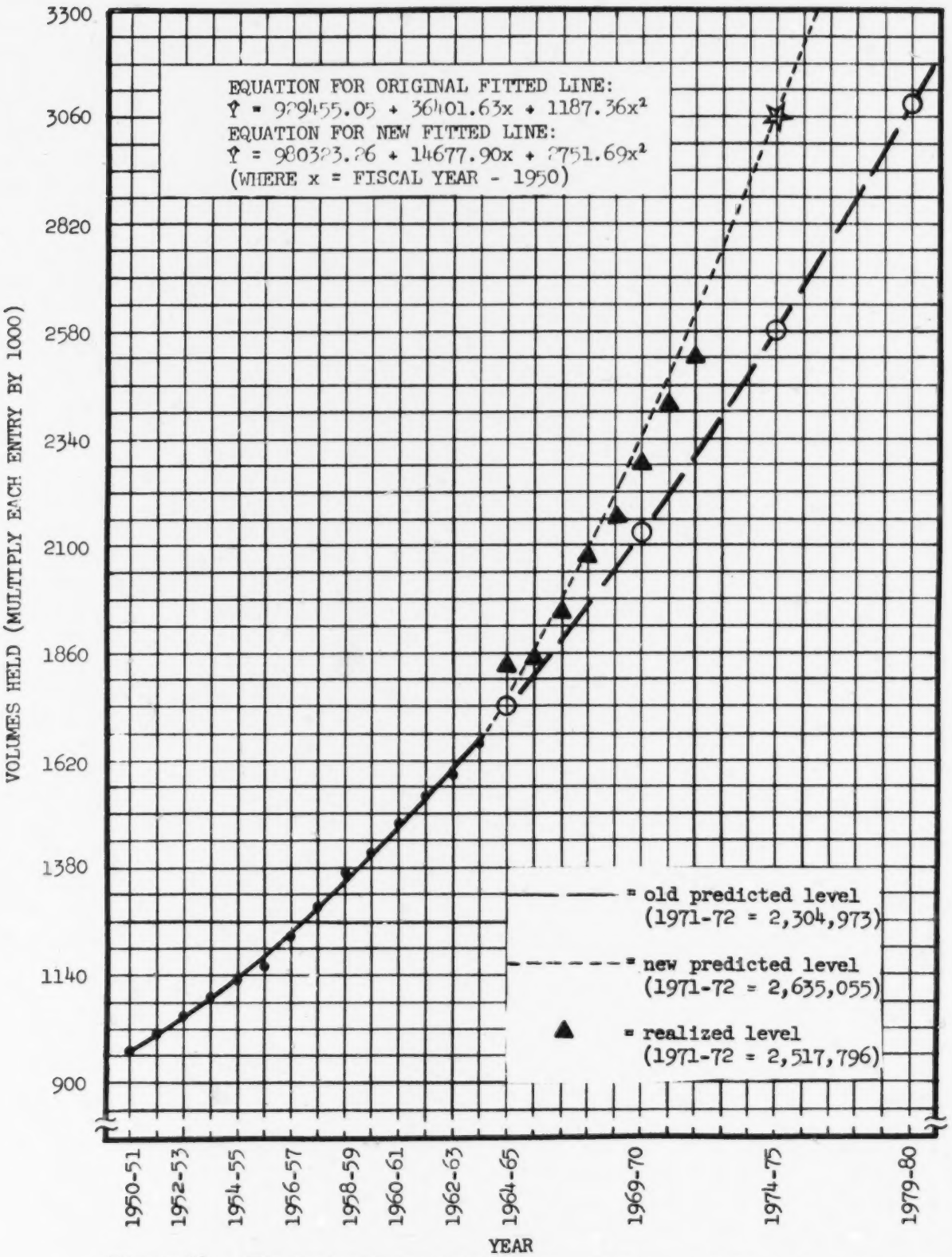

Figure 14. The Past and Predicted Future of Volumes Held in the Third Quartile Composite ARL Library, 1951-1980.

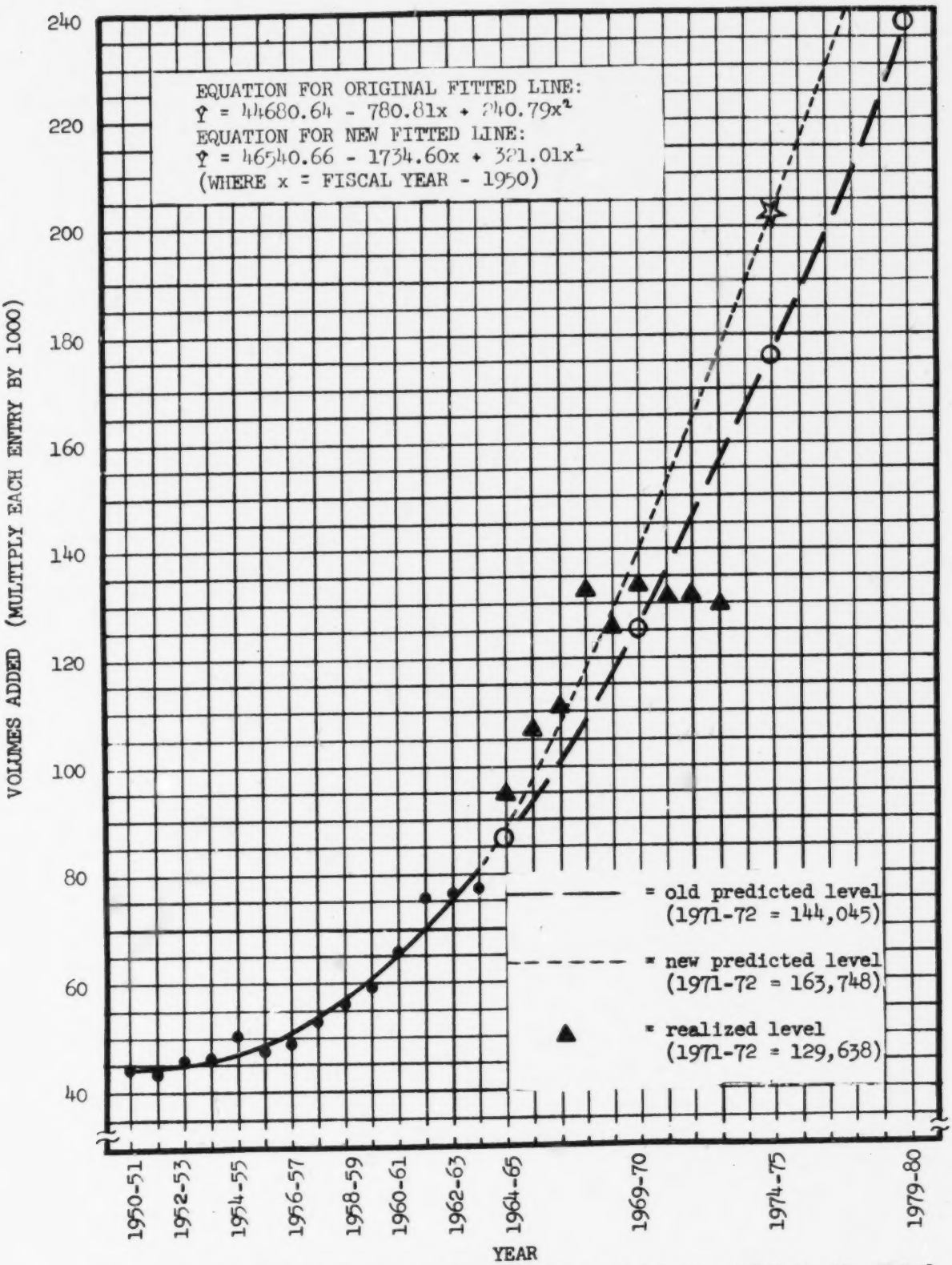

Figure 15. The Past and Predicted Future of Volumes Added in the Third Quartile Composite ARL Library, 1951-1980.

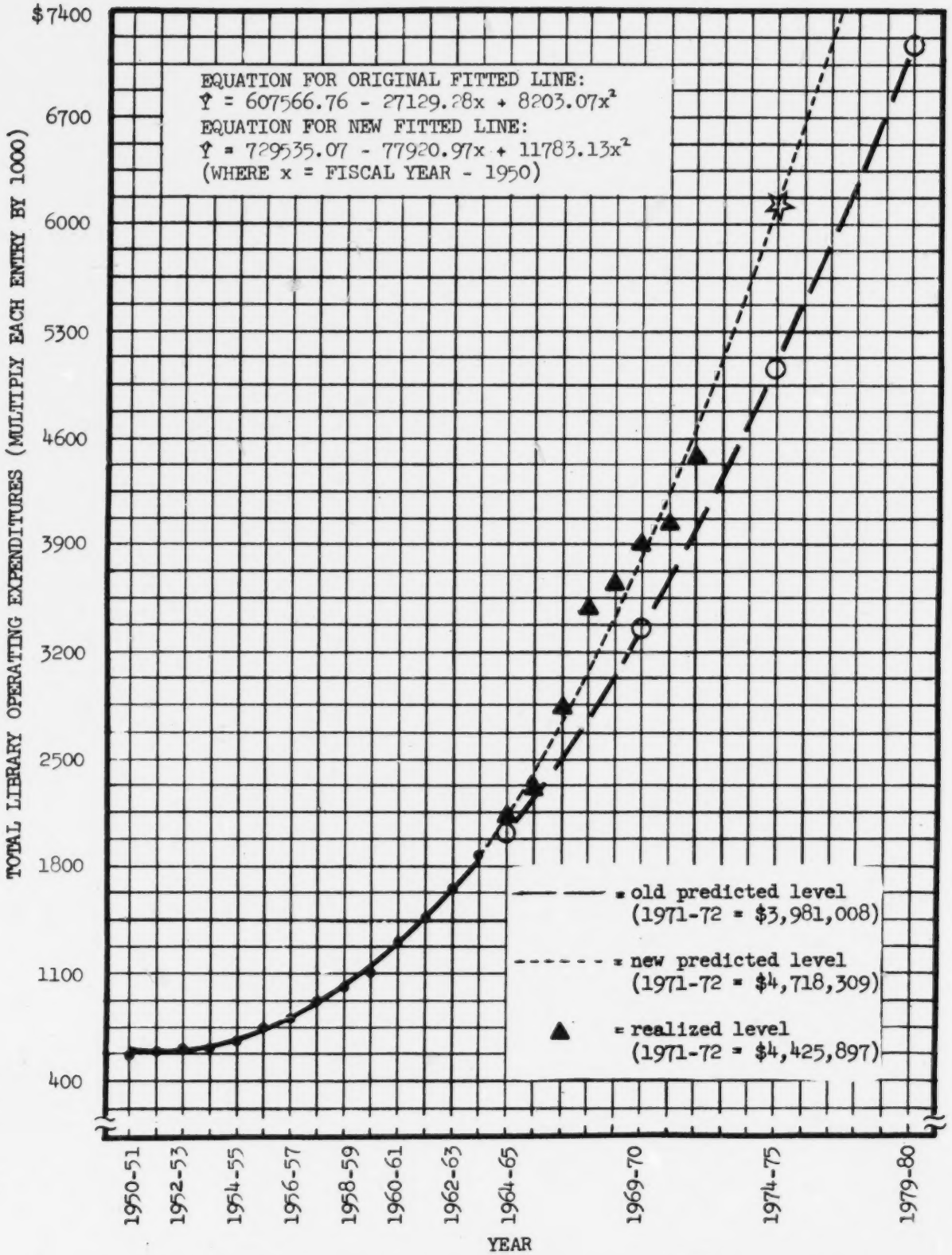

Figure 16. The Past and Predicted Future of Total Library Operating Expenditures in the Third Quartile Composite ARL Library, 1951-1980.

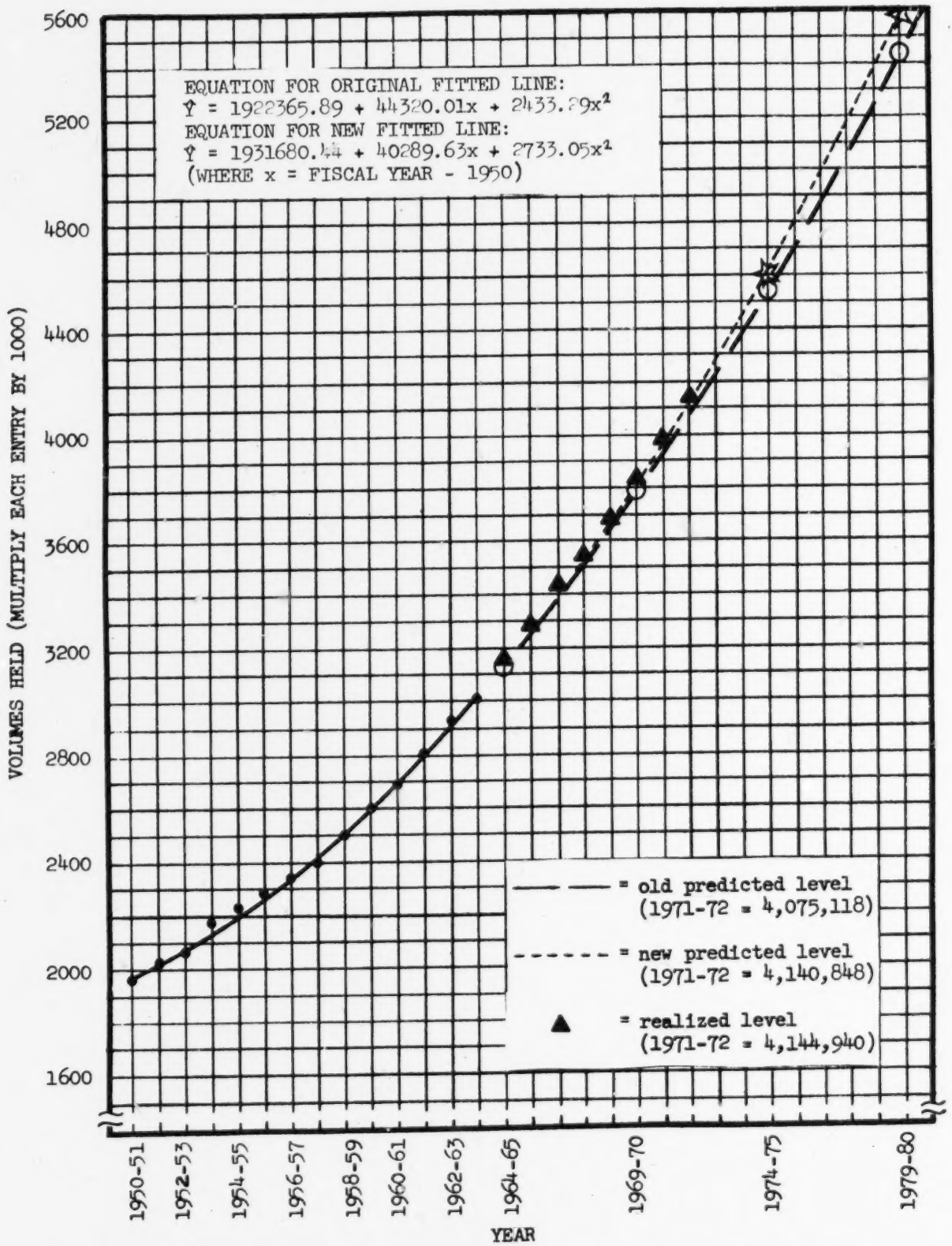

Figure 17. The Past and Predicted Future of Volumes Held in the Large Composite ARL Library, 1951-1980.

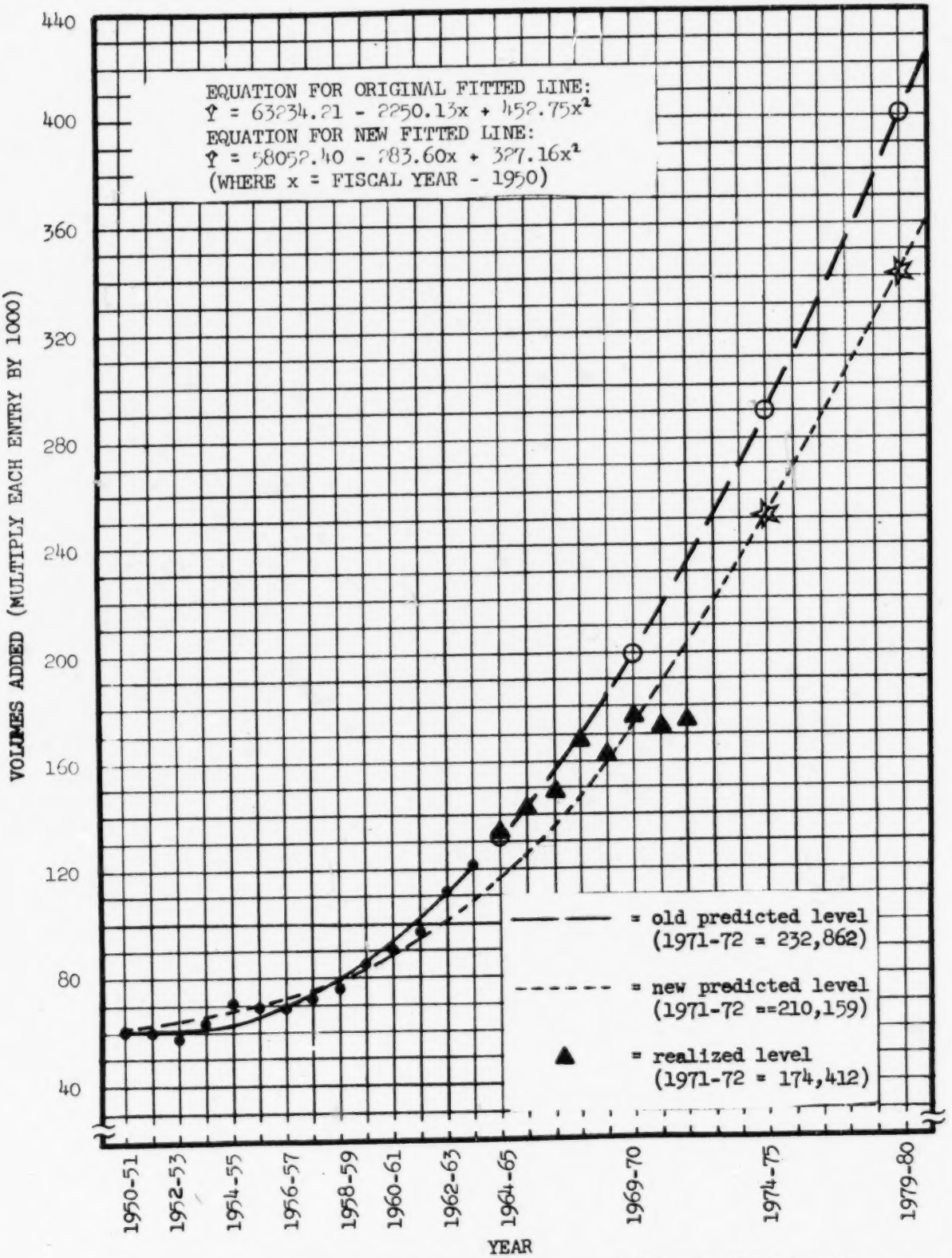

Figure 18. The Past and Predicted Future of Volumes Added in the Large Composite ARL Library, 1951-1980.

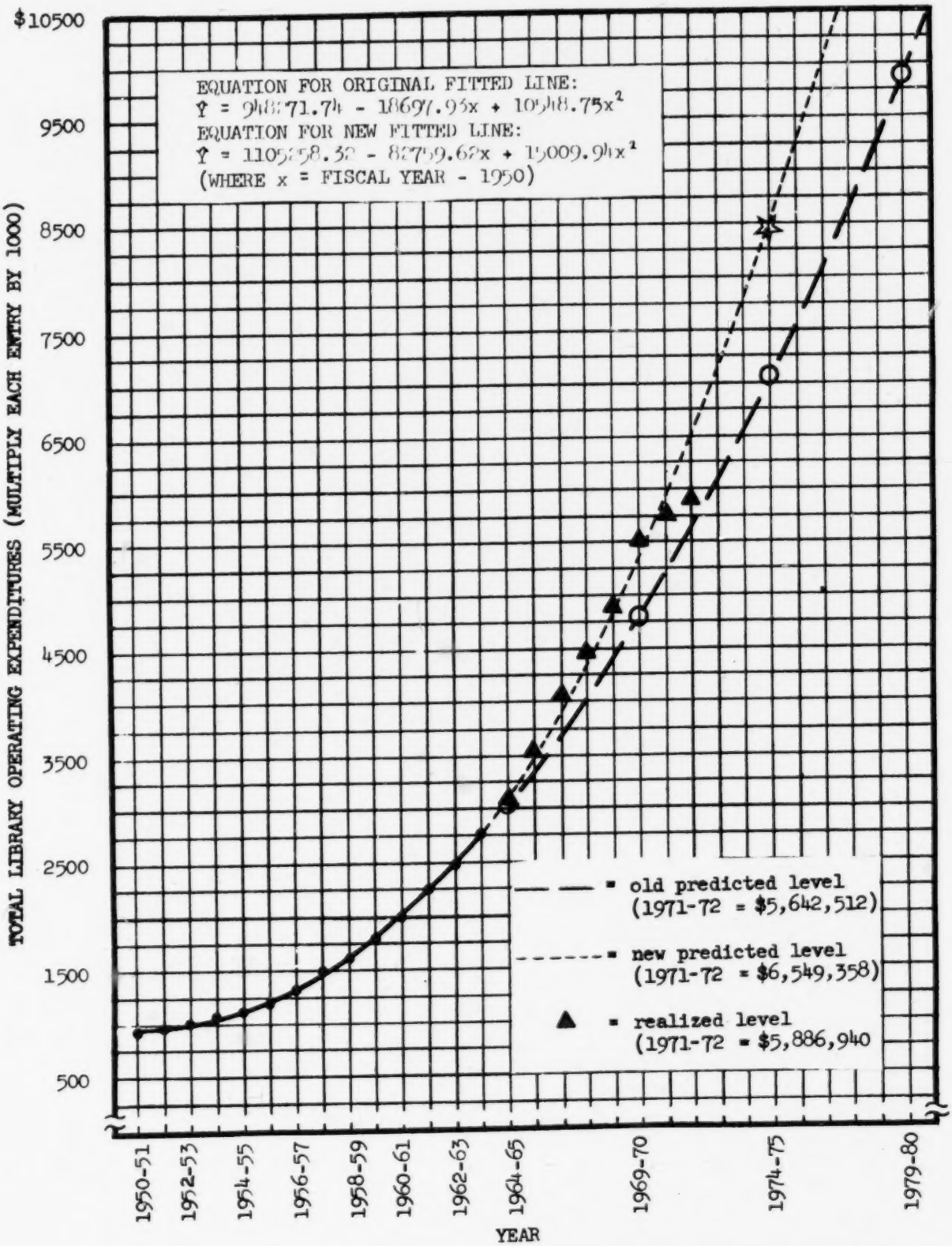

Figure 19. The Past and Predicted Future of Total Library Operating Expenditures in the Large Composite ARL Library, 1951-1980.

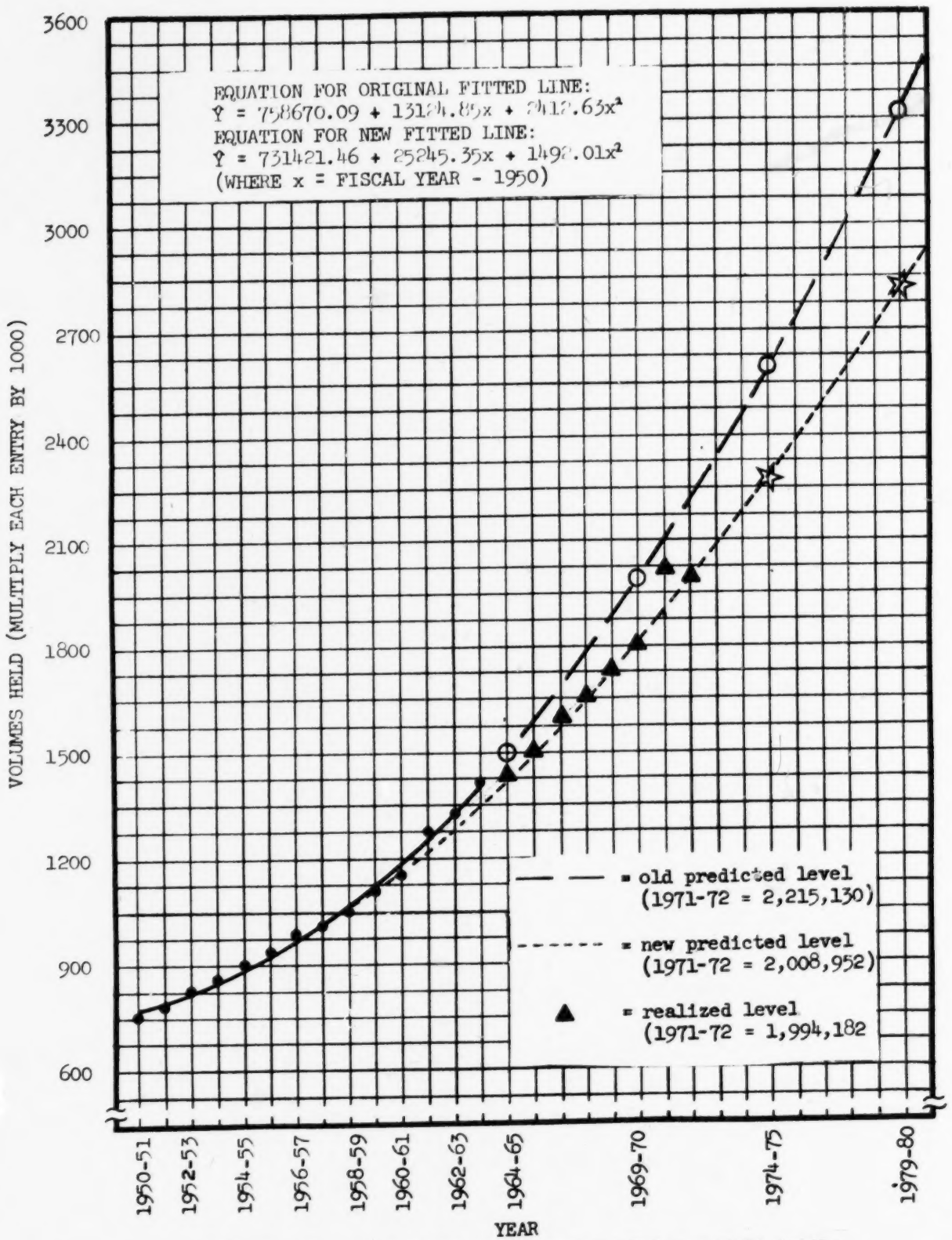

Figure 20. The Past and Predicted Future of Volumes Held in the Medium-Large Composite ARL Library, 1951-1980.

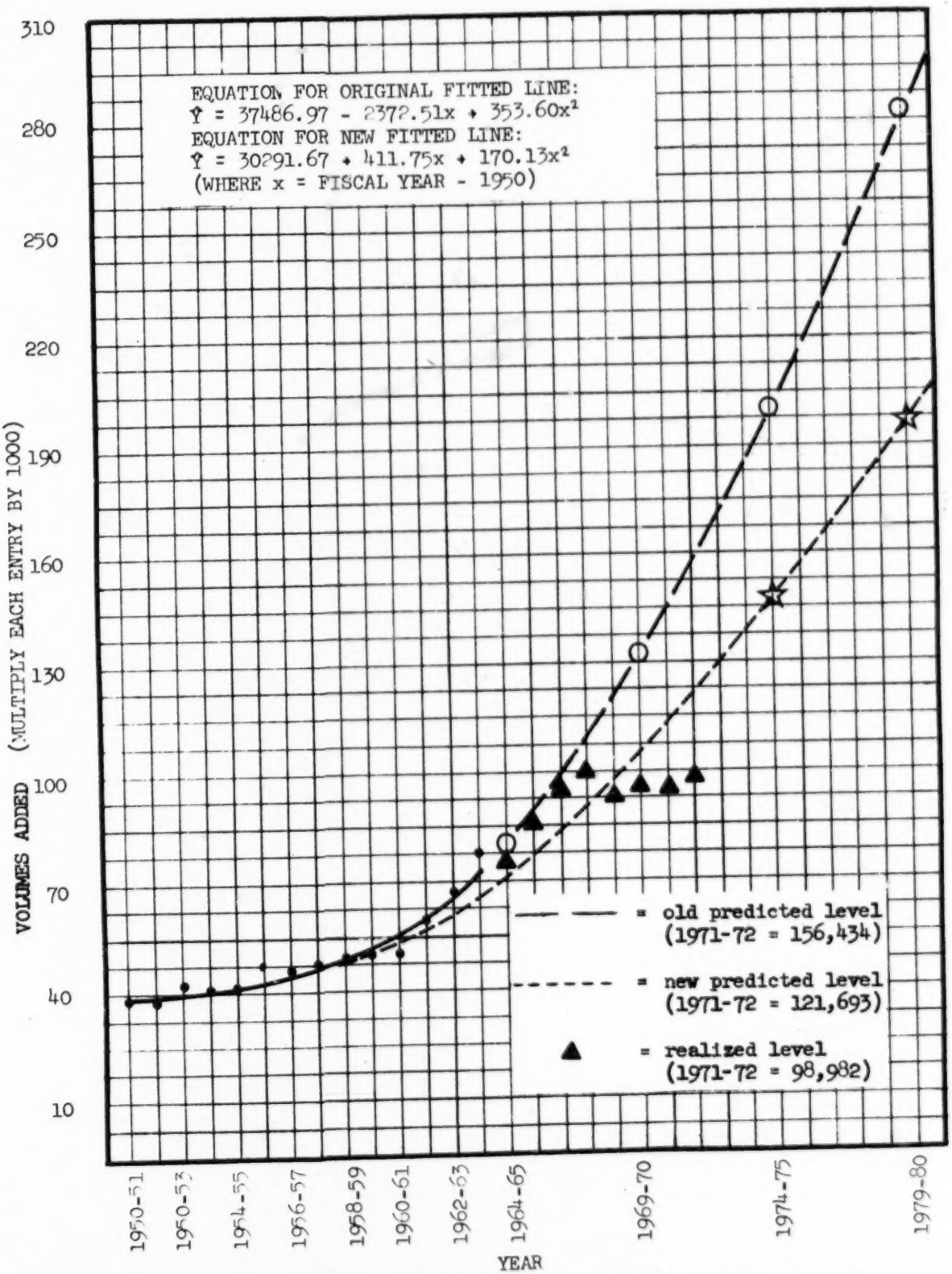

Figure 21. The Past and Predicted Future of Volumes Added in the Medium-Large Composite ARL Library, 1951-1980.

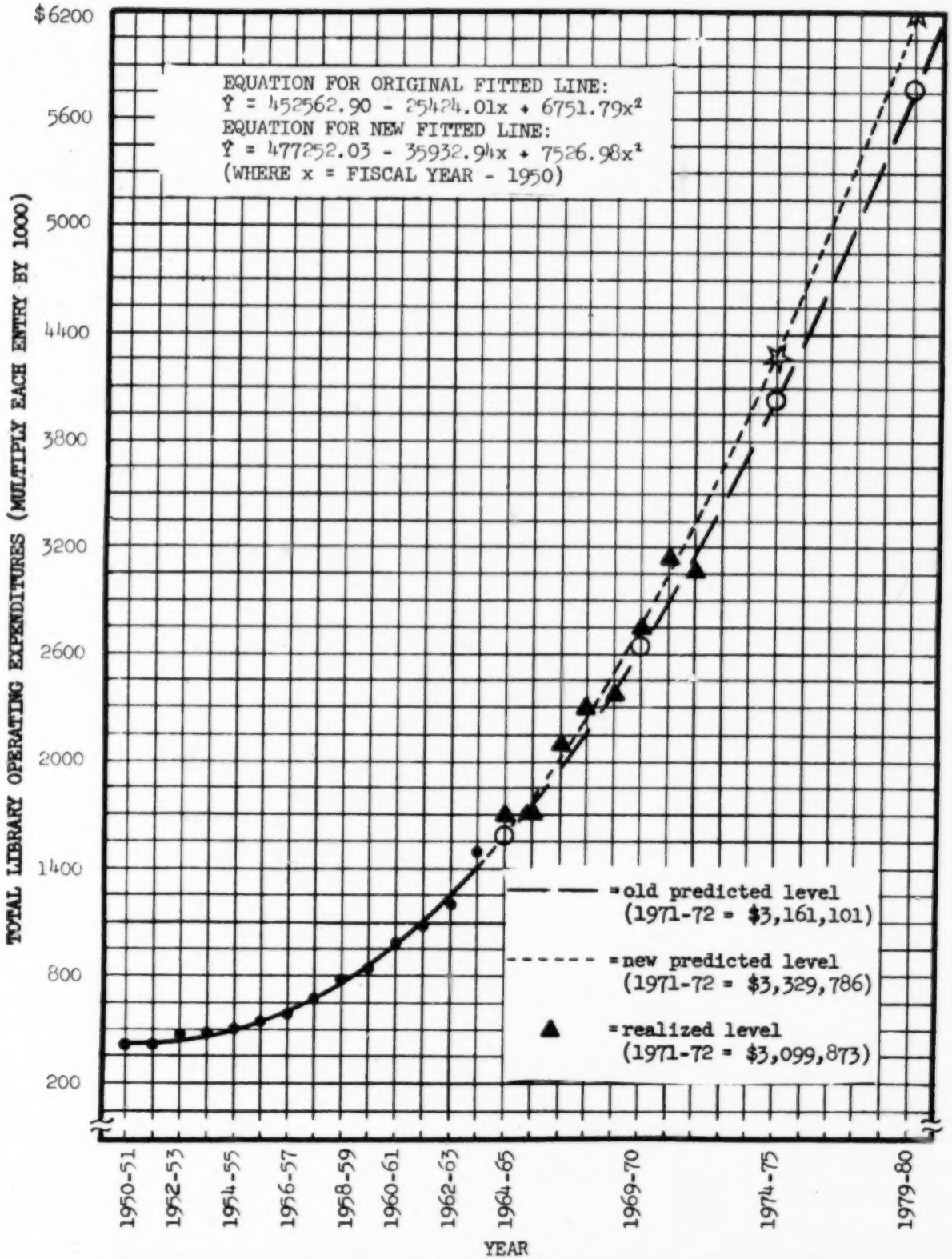

Figure 22. The Past and Predicted Future of Total Library Operating Expenditures in the Medium-Large Composite ARL Library, 1951-1980.

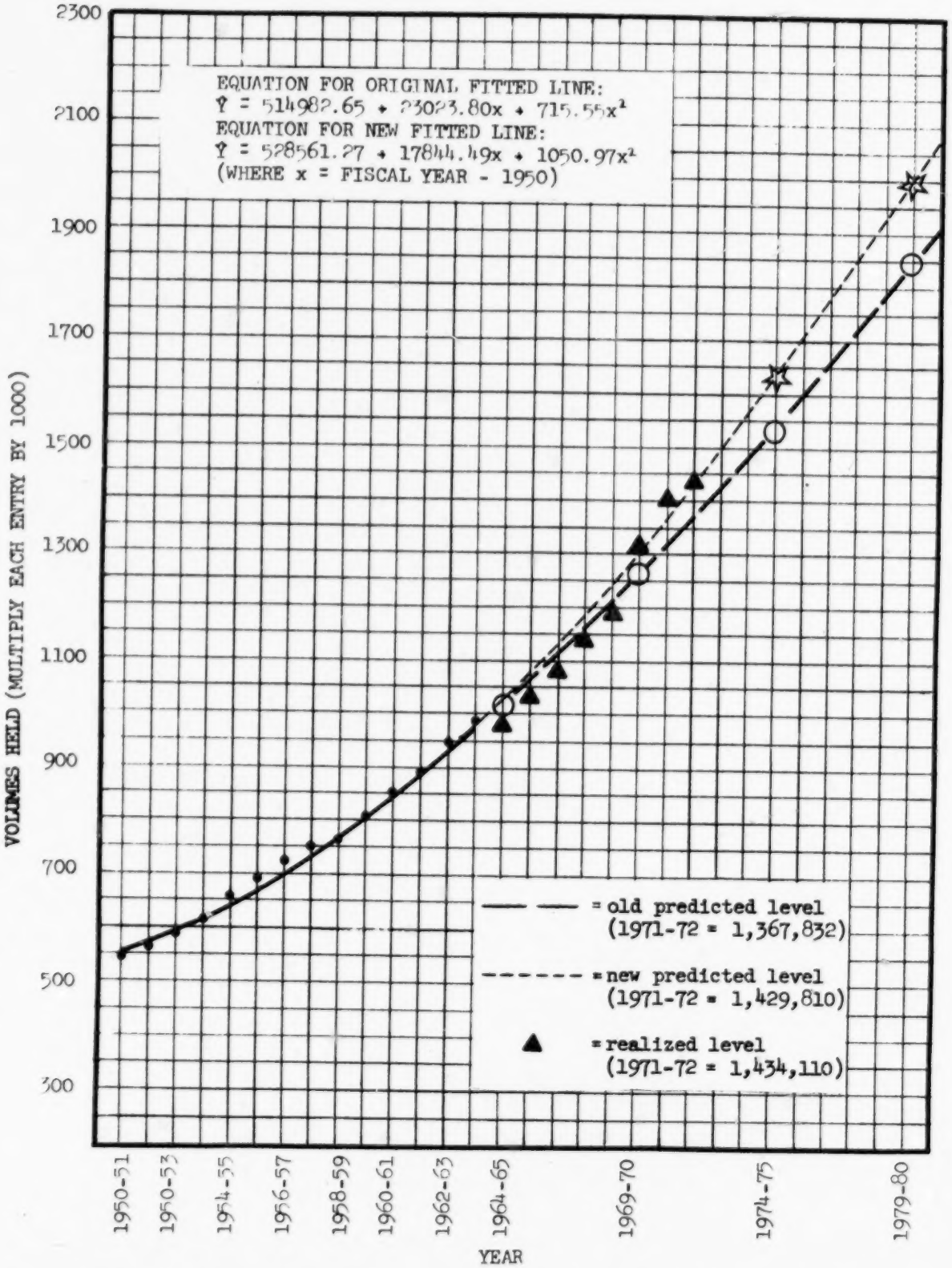

Figure 23. The Past and Predicted Future of Volumes Held in the Medium-Small Composite ARL Library, 1951-1980.

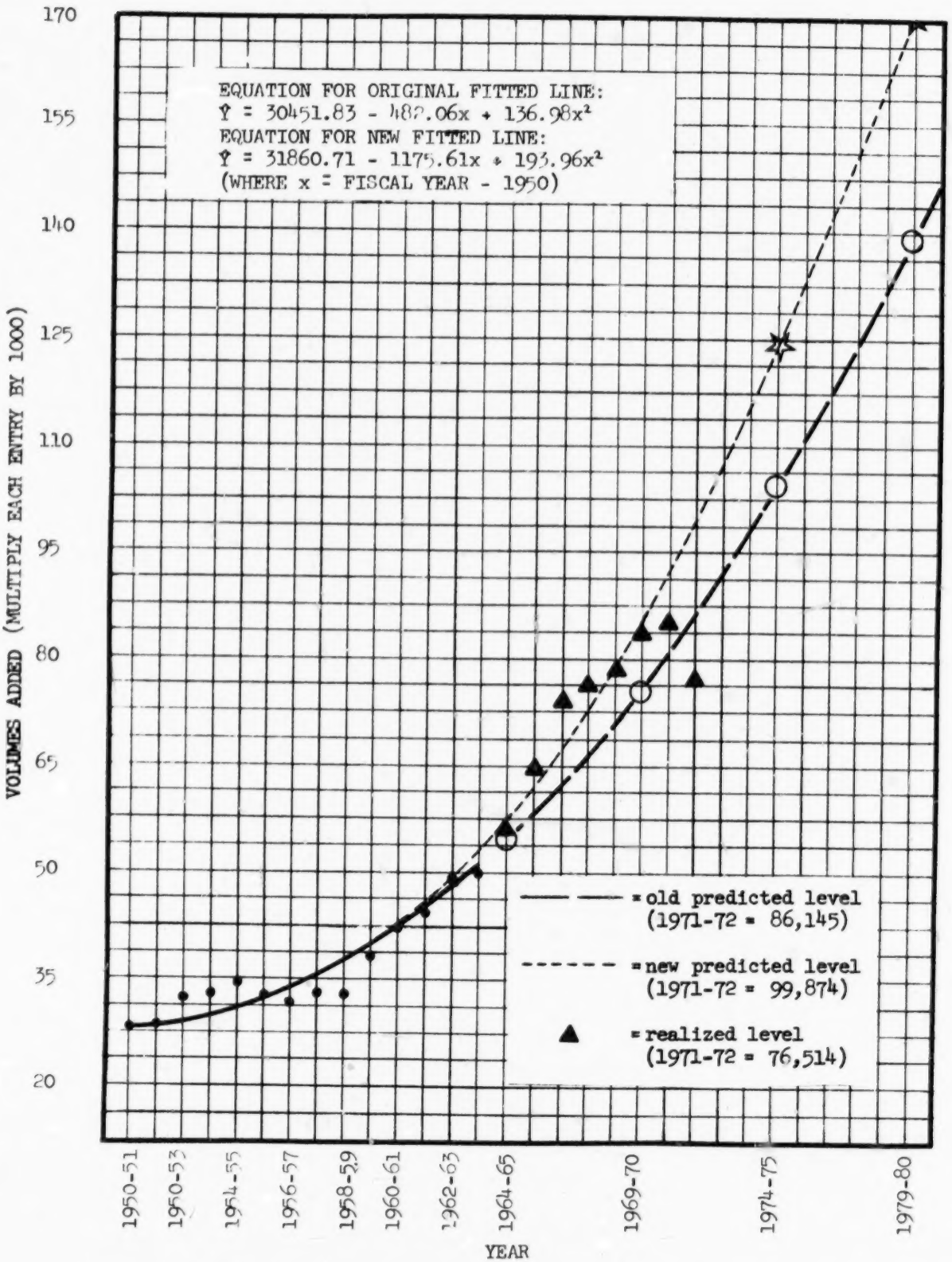

Figure 24. The Past and Predicted Future of Volumes Added in the Medium-Small Composite ARL Library, 1951-1980.

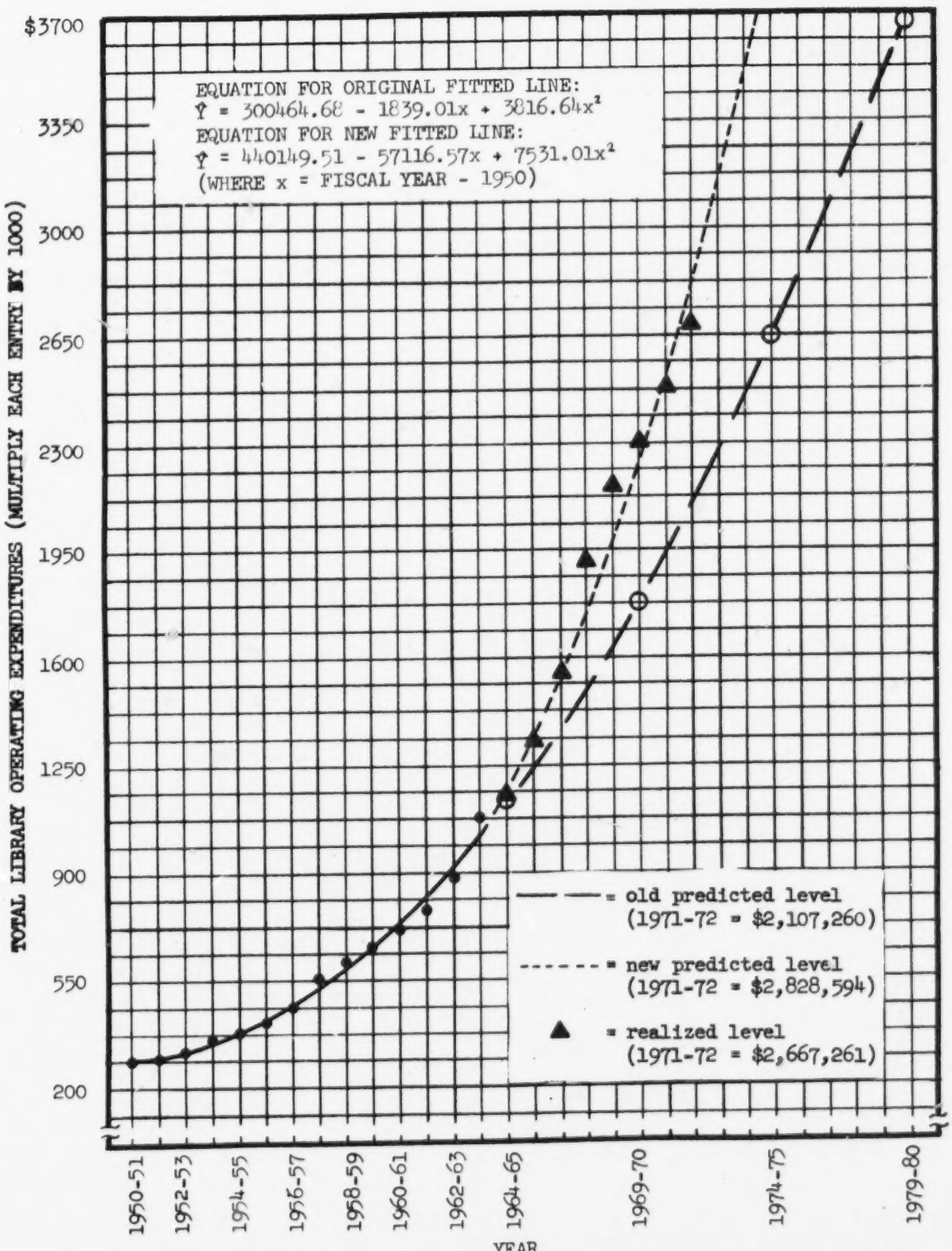

Figure 25. The Past and Predicted Future of Total Library Operating Expenditures in the Medium-Small Composite ARL Library, 1951-1980.

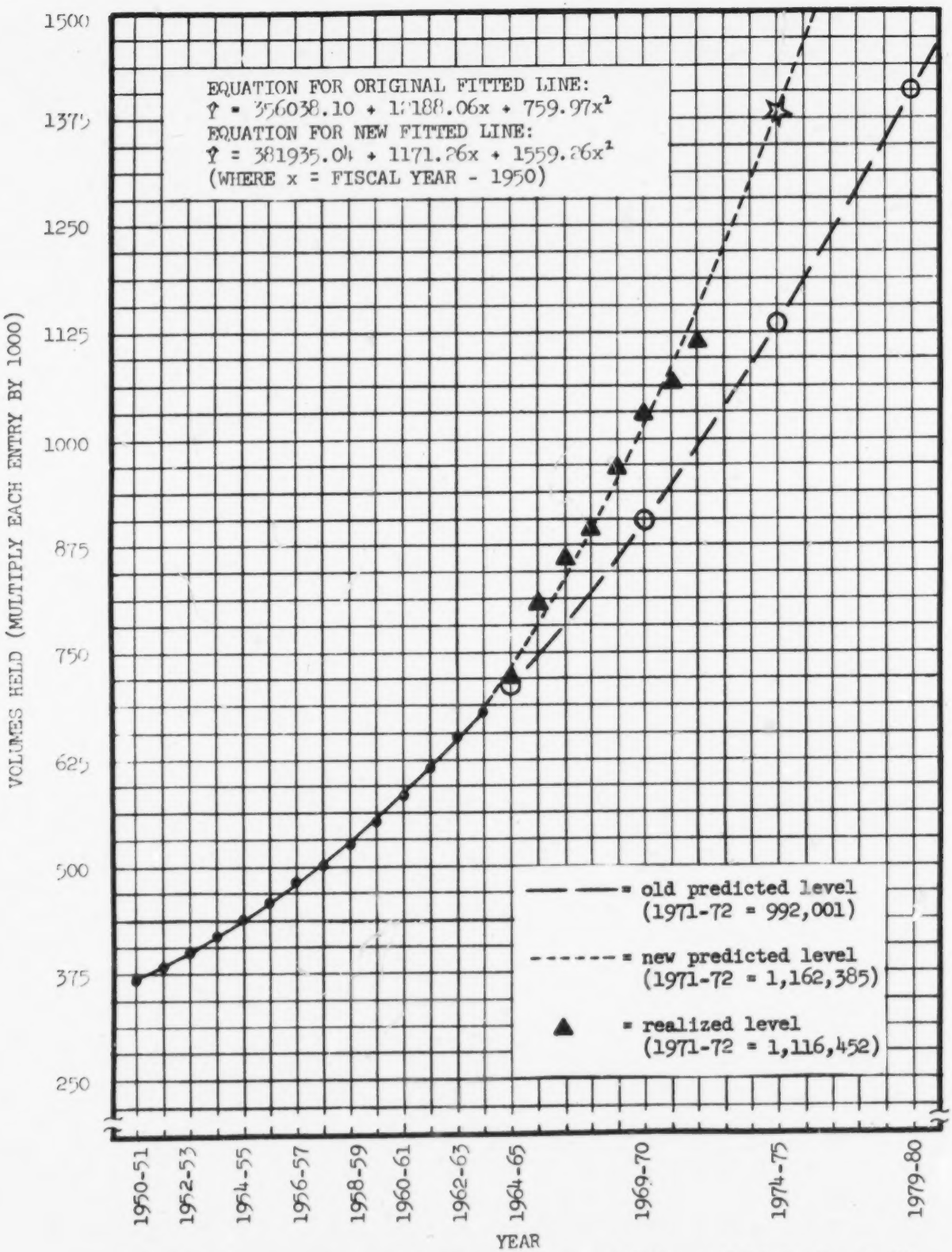

Figure 26. The Past and Predicted Future of Volumes Held in the Small Composite ARL Library, 1951-1980.

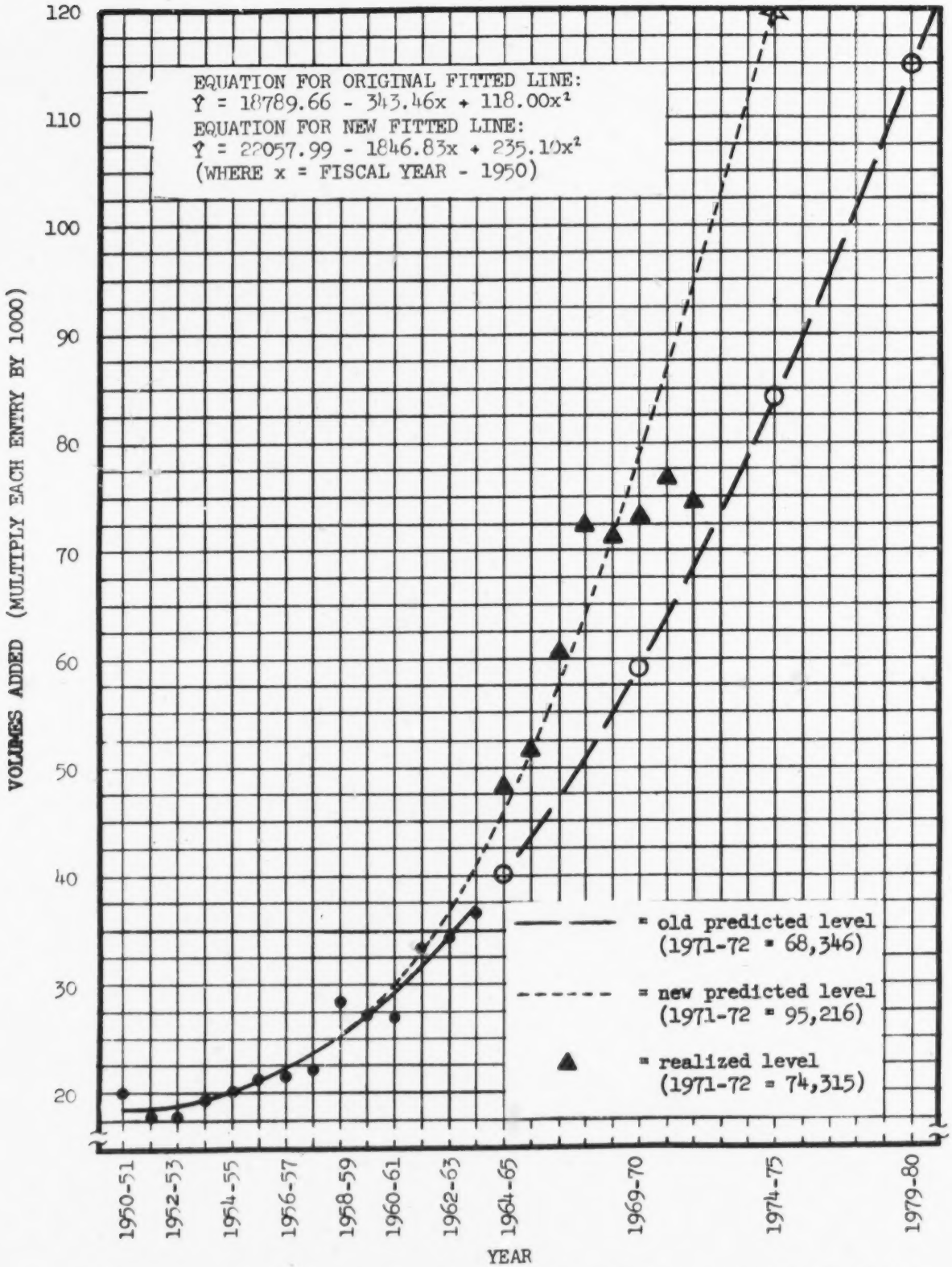

Figure 27. The Past and Predicted Future of Volumes Added in the Small Composite ARL Library, 1951-1980.

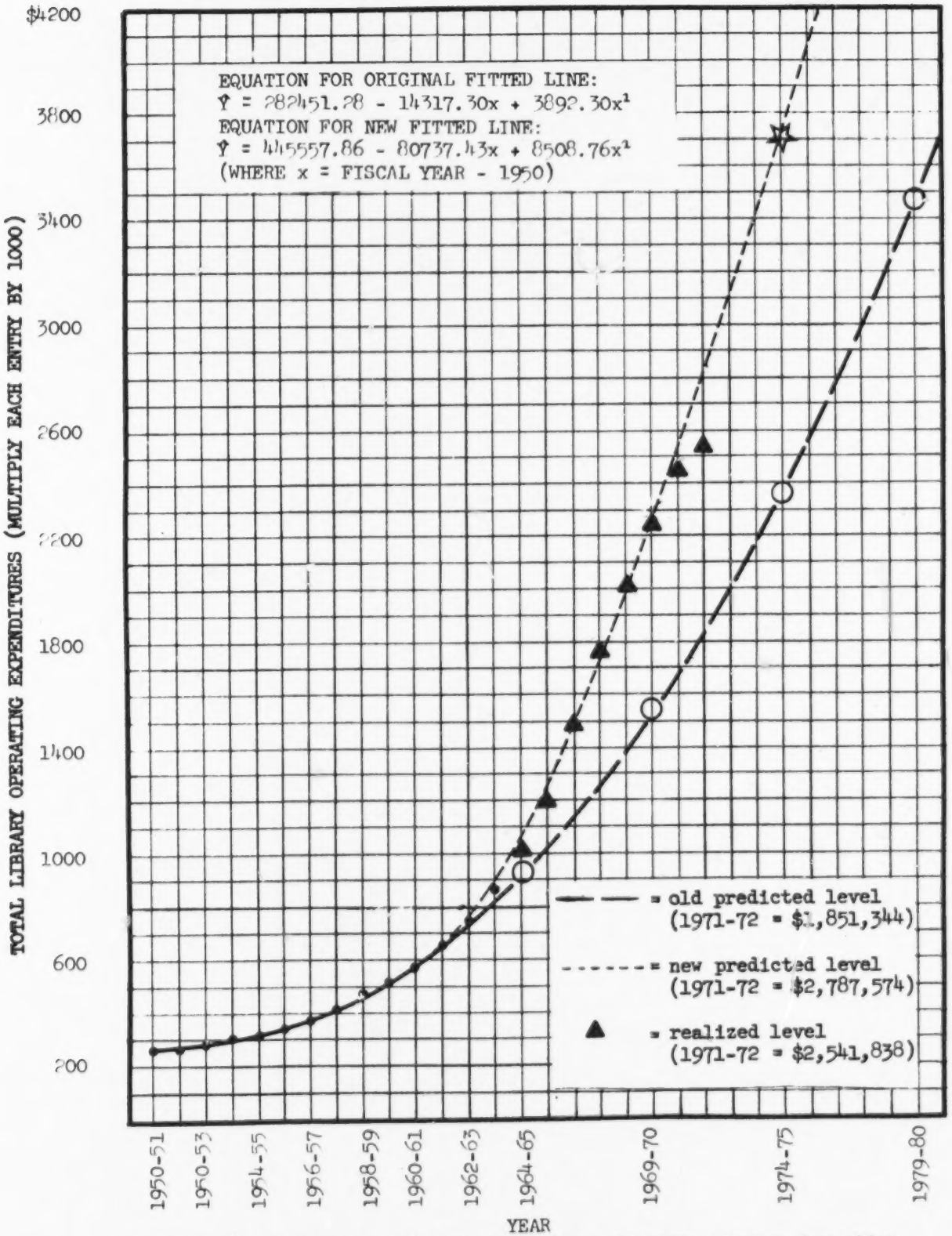

Figure 28. The Past and Predicted Future of Total Library Operating Expenditures in the Small Composite ARL Library, 1951-1980.

Table 1
The Average Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	1957196	110688	919698	1465659	82.2	136.6	2582928	20901
1969	1893511	101241	996071	1658874	85.5	150.4	2866922	21470
1970	1998632	107024	1153784	1878376	86.7	159.8	3268594	22472
1971	2079093	106778	1160762	2034381	86.1	164.2	3439578	22731
1972	2156618	105424	1117320	2154048	86.5	167.6	3526033	22846

Table 2
The Median Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	1317756	88965	804824	1114172	67.5	109.4	2065865	18675
1969	1403523	90773	850668	1314797	73.0	124.0	2296034	19249
1970	1476248	94314	1051471	1561444	73.0	136.5	2738877	20126
1971	1559958	96770	1099197	1595776	73.0	134.5	2921247	20602
1972	1638256	90124	1042842	1735519	74.0	141.0	3150626	21076

Table 3
The First Quartile Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	1033238	62304	561421	883746	49.0	92.0	1570977	13959
1969	1092054	63851	677170	1009401	52.0	101.0	1839170	12867
1970	1191218	63958	724284	1130688	54.0	100.0	2108122	14227
1971	1178985	67127	712526	1205399	53.0	104.0	2251759	15193
1972	1216049	63092	717475	1259420	52.0	105.0	2168581	14932

Table 4
The Third Quartile Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	2558258	132281	1159905	1841472	92.0	184.0	3439482	28863
1969	2178660	126675	1299567	2017548	94.0	184.0	3599268	29054
1970	2289708	133497	1447641	2180845	100.0	198.0	3753657	29880
1971	2417024	130801	1464499	2387024	103.0	196.0	4068426	30368
1972	2517796	129638	1432746	2631364	107.0	213.0	4425897	28967

Table 5
The "Large" Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	3532708	168250	1363516	2708928	146.8	238.7	4454554	22900
1969	3680409	162988	1505796	3054680	150.0	261.5	4956188	23286
1970	3839558	176846	1722149	3388483	152.1	267.8	5577370	23470
1971	3996387	172844	1702401	3608883	148.5	267.6	5781460	23142
1972	4144940	174412	1616637	3816001	148.1	277.9	5886940	22995

Table 6
The "Medium-Large" Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	1646764	99063	882532	1249375	70.1	117.7	2298374	21304
1969	1737460	93893	874896	1380355	73.3	130.7	2398184	21954
1970	1847013	96310	1120041	1572319	74.9	141.4	2847091	22632
1971	1903873	95786	1182290	1760141	76.5	148.6	3112289	23215
1972	1994182	98982	1055312	1838756	76.8	152.0	3099873	22764

Table 7
The "Medium-Small" Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	1171691	75700	717328	1043222	59.1	94.1	1893407	18663
1969	1246919	78900	800336	1189144	61.1	105.5	2170645	19631
1970	1334784	83156	874118	1345231	62.5	108.6	2392980	22434
1971	1405940	84441	855751	1457542	62.6	114.1	2507226	22917
1972	1434110	76514	889751	1563683	64.7	116.0	2667261	23561

Table 8
The "Small" Composite ARL Library
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	921269	74995	732523	906734	55.1	100.2	1754955	20867
1969	966589	71302	825895	1064765	60.2	108.2	2025886	21106
1970	1031420	74254	921212	1267415	60.3	126.5	2349587	21341
1971	1070768	76423	922853	1371751	59.2	131.1	2447311	21618
1972	1116452	74315	928264	1462440	58.7	129.1	2541838	22071

Table 9
Summary of the Correlations Among the
Library and University Characteristics*

	Volumes Held	Volumes Added	Materials & Binding Expenditures	Salaries Expense	Wages Expense	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment	Graduate Enrollment
PHD	.666 .626 .566	.648 .599 .502	.706 .637 .577	.816 .777 .723	.751 .411 .048	.784 .738 .694	.806 .731 .676	.786 .735 .713	.628 .585 .492	.762 .714 .607
Graduate Enrollment	.438 .369 .245	.409 .345 .258	.443 .357 .264	.564 .522 .437	.730 .140 .020	.538 .473 .376	.693 .605 .382	.505 .462 .378	.806 .718 .677	
Total Enrollment	.197 .178 .119	.407 .306 .201	.412 .346 .332	.481 .422 .318	.536 .277 .119	.470 .422 .378	.513 .328 .192	.425 .394 .312		
Total Expenditures	.873 .834 .783	.923 .882 .696	.964 .948 .894	.990 .983 .968	.842 .698 .562	.951 .938 .930	.925 .871 .854			
Non-Professional Staff Size (FTE)	.876 .828 .748	.882 .758 .563	.838 .800 .749	.935 .898 .883	.689 .388 .245	.877 .785 .745				
Professional Staff Size (FTE)	.868 .828 .794	.898 .835 .659	.923 .875 .798	.968 .947 .929	.756 .624 .438					
Wage Expense	.517 .334 .146	.692 .515 .418	.739 .599 .479	.805 .636 .398						
Salaries Expense	.868 .818 .786	.908 .831 .665	.928 .895 .808							
Materials & Binding Expenditures	.862 .782 .702	.934 .855 .740								
Volumes Added	.868 .798 .582									

*Upper coefficient is the highest annual correlation obtained; middle coefficient is the median of those obtained; lower coefficient is the lowest obtained (based on 1951-1964 data only).

Table 10
Correlation of the Volumes Held Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	1.000	.854	.389	.613	.625	.620	.602	.026
1969	1.000	.779	.732	.886	.900	.902	.877	.108
1970	1.000	.768	.660	.881	.900	.876	.876	.089
1971	1.000	.742	.650	.886	.891	.848	.879	.065
1972	1.000	.811	.735	.885	.901	.880	.888	.060

Table 11
Correlation of the Volumes Added Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.854	1.000	.457	.557	.569	.537	.574	.203
1969	.779	1.000	.862	.870	.829	.824	.891	.285
1970	.768	1.000	.712	.809	.843	.743	.831	.246
1971	.742	1.000	.770	.798	.828	.679	.838	.347
1972	.811	1.000	.851	.766	.808	.751	.820	.234

Table 12
Correlation of the Materials & Binding Expenditures Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.389	.457	1.000	.745	.746	.680	.855	.431
1969	.732	.862	1.000	.852	.839	.787	.922	.344
1970	.660	.712	1.000	.714	.753	.680	.864	.361
1971	.650	.770	1.000	.727	.763	.635	.856	.389
1972	.735	.851	1.000	.842	.844	.780	.908	.356

Table 13
Correlation of the Total Salaries & Wages Expenditures Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.613	.557	.745	1.000	.946	.905	.970	.329
1969	.886	.870	.852	1.000	.959	.910	.983	.280
1970	.881	.809	.714	1.000	.967	.908	.964	.276
1971	.886	.798	.727	1.000	.966	.891	.973	.268
1972	.885	.766	.842	1.000	.955	.914	.987	.232

Table 14
Correlation of the Professional Staff Size (FTE) Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.625	.569	.746	.946	1.000	.883	.948	.329
1969	.900	.829	.839	.959	1.000	.882	.947	.319
1970	.900	.843	.753	.967	1.000	.883	.954	.303
1971	.891	.828	.763	.966	1.000	.845	.957	.315
1972	.901	.808	.844	.955	1.000	.866	.955	.305

Table 15
Correlation of the Non-Professional Staff Size (FTE) Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.620	.537	.680	.905	.883	1.000	.904	.179
1969	.902	.824	.787	.910	.882	1.000	.910	.129
1970	.876	.743	.680	.908	.883	1.000	.902	.157
1971	.848	.679	.635	.891	.845	1.000	.871	.151
1972	.880	.751	.780	.914	.866	1.000	.917	.127

Table 16
Correlation of the Total Library Operating Expenditures Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.602	.574	.855	.970	.948	.904	1.000	.336
1969	.877	.891	.922	.983	.947	.910	1.000	.271
1970	.876	.831	.864	.964	.954	.902	1.000	.288
1971	.879	.838	.856	.973	.957	.871	1.000	.297
1972	.888	.820	.908	.987	.955	.917	1.000	.244

Table 17
Correlation of the Total Enrollment Statistic
With Each of Seven Other Statistics
1967-68 through 1971-72

Year	Volumes Held	Volumes Added	Materials & Binding Expenditures	Total Salaries & Wages Expenditures	Professional Staff Size (FTE)	Non-Professional Staff Size (FTE)	Total Library Operating Expenditures	Total Enrollment
1968	.026	.203	.431	.329	.329	.179	.336	1.000
1969	.108	.285	.344	.280	.319	.129	.271	1.000
1970	.089	.246	.361	.276	.303	.157	.288	1.000
1971	.065	.347	.389	.268	.315	.151	.297	1.000
1972	.060	.234	.356	.232	.305	.127	.244	1.000

Table 18
Annual Unit Costs of Acquisitions for the Average,
Median, Large, Medium-Large, Medium-Small, and Small Composite Libraries
1967-68 through 1971-72

Year	Average Composite Library	Median Composite Library	Large Composite Library	Medium-Large Composite Library	Medium-Small Composite Library	Small Composite Library
1968	$ 8.85	$ 9.05	$ 8.10	$ 8.91	$ 9.48	$ 9.77
1969	9.84	9.37	9.24	9.32	10.14	11.58
1970	10.78	11.15	9.74	11.63	10.51	12.41
1971	10.87	11.36	9.85	12.34	10.13	12.08
1972	10.59	11.57	8.83	11.99	11.47	12.79

Table 19
Percentages of Annual Increase in Collection Size (Volumes Held)
For the Average, Median, Large, Medium-Large, Medium-Small, and Small Composite Libraries
1967-68 through 1971-72

Year	Average Composite Library	Median Composite Library	Large Composite Library	Medium-Large Composite Library	Medium-Small Composite Library	Small Composite Library
1968	5.76%	5.67%	3.46%	3.13%	3.76%	6.96%
1969	5.35	5.18	4.43	5.40	6.33	7.38
1970	5.55	6.51	4.32	6.31	7.05	6.71
1971	4.03	3.16	4.08	3.08	5.33	3.81
1972	3.73	5.02	4.76	6.35	2.18	-2.01

Table 20

Ranking or Relative Standings of 58 Libraries with Respect to Volumes Held as Reported for 1971-72 through 1967-68.

SCHOOL	VOLUMES HELD	1971-72 Rank	1970-71 Rank	1969-70 Rank	1968-69 Rank	1967-68 Rank
Harvard	8,707,822	1	1	1	1	1
Yale	5,993,856	2	2	2	2	2
Illinois	4,992,391	3	3	3	3	3
Columbia	4,448,350	4	5	5	4	4
Michigan	4,332,518	5	4	4	5	5
California, Berkeley	4,153,936	6	6	6	6	6
Cornell	3,888,634	7	7	7	7	7
Stanford	3,721,343	8	8	8	8	8
Indiana	3,344,141	9	11	12	12	12
Minnesota	3,245,740	10	9	10	10	10
Chicago	3,212,296	11	10	9	9	9
California, Los Angeles	3,164,328	12	12	11	11	11
Texas	2,734,595	13	14	17	16	15
Ohio State	2,670,984	14	13	13	13	13
Wisconsin	2,517,796	15	15	14	17	17
Northwestern	2,433,420	16	16	15	20	20
Princeton	2,412,871	17	18	19	18	18
Pennsylvania	2,410,933	18	17	18	14	14
Duke	2,333,382	19	19	20	19	19
New York	2,175,680	20	20	16	15	16
Johns Hopkins	1,993,113	21	21	21	21	21
Washington, Seattle	1,938,298	22	23	23	22	22
North Carolina	1,894,132	23	24	24	24	23
Michigan State	1,867,236	24	25	25	26	26
Virginia	1,777,936	25	26	26	25	25
Iowa	1,672,927	26	28	29	29	27
Pittsburgh	1,664,234	27	30	32	33	36
Missouri	1,639,261	28	27	27	27	29
Kansas	1,639,070	29	29	28	28	28

Table 20

Ranking or Relative Standings of 58 Libraries with Respect to Volumes Held as Reported for 1971-72 through 1967-68. (Continued)

SCHOOL	VOLUMES HELD	1971-72 Rank	1970-71 Rank	1969-70 Rank	1968-69 Rank	1967-68 Rank
Syracuse	1,637,442	30	32	30	30	30
Rutgers	1,584,259	31	22	22	23	24
Colorado	1,570,251	32	33	34	34	34
Florida	1,550,486	33	34	33	32	32
Pennsylvania State	1,547,593	34	31	31	35	37
Southern California	1,524,066	35	35	35	31	31
Brown	1,428,298	36	36	37	36	33
Wayne	1,405,035	37	37	39	38	39
Maryland	1,394,629	38	41	44	44	47
Louisiana State	1,391,141	39	38	38	37	35
Mass. Institute of Tech.	1,383,492	40	39	42	42	42
Washington (St. Louis)	1,371,232	41	42	43	41	40
Utah	1,311,772	42	44	40	40	43
Rochester	1,232,324	43	43	46	45	45
Kentucky	1,216,049	44	47	45	43	49
Oklahoma	1,201,372	45	45	48	47	38
Joint University	1,197,932	46	40	41	48	46
Cincinnati	1,190,741	47	46	47	46	44
Nebraska	1,185,429	48	49	51	51	53
Oregon	1,146,199	49	48	49	49	48
Temple	1,142,862	50	51	52	53	54
Notre Dame	1,054,553	51	53	53	52	55
Purdue	1,011,430	52	50	50	50	51
Tennessee	1,007,995	53	52	36	39	41
Boston	941,109	54	56	57	54	56
Florida State	922,623	55	54	54	55	52
Washington State	892,658	56	55	55	56	50
Iowa State	891,309	57	57	56	57	57
Texas A & M	768,366	58	58	58	58	58

Table 21

Ranking or Relative Standings of 58 Libraries with Respect to Volumes Added as Reported for 1971-72 through 1967-68.

SCHOOL	VOLUMES ADDED	1971-72 Rank	1970-71 Rank	1969-70 Rank	1968-69 Rank	1967-68 Rank
Harvard	387,671	1	2	3	2	2
Texas	309,853	2	11	23	31	21
Indiana	277,638	3	1	1	4	1
Yale	219,719	4	4	4	7	4
Illinois	192,896	5	3	5	6	8
Stanford	159,229	6	8	2	1	5
California, Berkeley	156,379	7	6	8	9	10
Columbia	153,308	8	12	16	15	15
Chicago	151,165	9	18	10	10	11
Michigan	148,826	10	5	6	3	7
Ohio State	138,300	11	10	9	12	19
Utah	136,528	12	15	20	21	25
Cornell	130,976	13	7	7	5	6
California, Los Angeles	130,618	14	16	15	8	13
Minnesota	129,638	15	9	13	17	12
Pittsburgh	126,502	16	17	18	14	20
Maryland	123,400	17	22	25	28	9
Pennsylvania State	115,742	18	19	11	13	14
Rutgers	114,932	19	14	12	16	22
Michigan State	113,768	20	13	17	18	18
Duke	110,089	21	25	28	27	32
Wisconsin	109,430	22	21	14	11	16
New York	107,815	23	28	27	22	3
Pennsylvania	103,879	24	32	26	32	24
Syracuse	102,468	25	24	32	30	31
Princeton	99,824	26	20	29	24	33
Mass. Institute of Tech.	99,127	27	29	30	38	34
Temple	98,664	28	33	41	36	48
Iowa	91,218	29	30	40	42	42

Table 21

Ranking or Relative Standings of 58 Libraries with Respect to Volumes Added as Reported for 1971-72 through 1967-68. (Continued)

SCHOOL	VOLUMES ADDED	1971-72 Rank	1970-71 Rank	1969-70 Rank	1968-69 Rank	1967-68 Rank
Boston	89,029	30	37	37	44	45
Washington (St. Louis)	83,918	31	39	36	40	40
North Carolina	83,562	32	26	24	37	28
Virginia	83,277	33	35	31	34	35
Southern California	82,927	34	41	54	47	47
Nebraska	82,662	35	36	42	46	52
Wayne	73,085	36	23	33	26	30
Kansas	72,377	37	42	43	29	36
Kentucky	71,823	38	40	39	54	50
Colorado	71,298	39	27	21	25	23
Tennessee	69,382	40	43	22	23	26
Washington, Seattle	66,148	41	31	34	35	37
Northwestern	65,925	42	34	35	33	29
Florida	63,398	43	44	44	41	44
Iowa State	63,092	44	50	46	53	58
Rochester	56,800	45	45	49	50	46
Missouri	55,050	46	51	38	19	27
Texas A & M	54,125	47	49	52	57	43
Purdue	53,665	48	38	45	43	39
Oregon	47,111	49	52	53	55	55
Joint University	46,931	50	53	47	45	53
Florida State	46,821	51	56	50	39	38
Louisiana State	46,087	52	46	55	52	49
Oklahoma	44,200	53	47	51	48	41
Washington State	43,232	54	54	58	56	56
Notre Dame	41,331	55	48	57	51	51
Johns Hopkins	41,039	56	57	19	20	17
Brown	40,409	57	55	48	49	54
Cincinnati	36,307	58	58	56	58	57

Table 22

Ranking or Relative Standings of 58 Libraries with

Respect to Total Library Operating Expenditures as Reported for 1971-72 through 1967-68.

SCHOOL	TOTAL EXPENDITURES	1971-72 Rank	1970-71 Rank	1969-70 Rank	1968-69 Rank	1967-68 Rank
Harvard	$9,222,948	1	1	1	1	1
Yale	7,041,476	2	2	2	2	4
Stanford	7,034,657	3	6	6	6	6
California, Berkeley	6,382,024	4	3	4	5	2
California, Los Angeles	6,331,586	5	4	3	3	3
Michigan	6,184,074	6	5	5	4	5
Columbia	5,958,812	7	9	7	8	10
Indiana	5,870,200	8	11	11	10	9
Illinois	5,715,613	9	8	10	9	8
Cornell	5,637,360	10	10	8	7	7
Minnesota	5,084,326	11	13	13	13	13
Pennsylvania State	4,958,480	12	12	12	11	11
Texas	4,737,768	13	7	9	31	12
Maryland	4,564,548	14	15	16	17	18
Wisconsin	4,425,897	15	17	14	12	14
Rutgers	4,388,480	16	19	20	19	26
Pennsylvania	4,189,810	17	21	21	20	20
Ohio State	4,106,832	18	16	17	16	15
Chicago	4,079,694	19	18	18	14	16
New York	4,053,158	20	23	25	24	21
Pittsburgh	3,808,558	21	25	23	21	24
Northwestern	3,763,392	22	24	30	25	25
Washington, Seattle	3,692,507	23	14	15	15	17
Princeton	3,684,576	24	20	22	23	19
Wayne	3,390,750	25	22	19	18	23
Virginia	3,383,632	26	30	40	40	45
North Carolina	3,173,787	27	26	27	29	29
Michigan State	3,169,829	28	27	24	22	22
Temple	3,156,589	29	29	31	33	36

Table 22

Ranking or Relative Standings of 58 Libraries with Respect to Total Library Operating Expenditures as Reported for 1971-72 through 1967-68. (Continued)

SCHOOL	TOTAL EXPENDITURES	1971-72 Rank	1970-71 Rank	1969-70 Rank	1968-69 Rank	1967-68 Rank
Duke	$3,144,662	30	28	28	34	33
Colorado	2,903,025	31	33	33	30	30
Boston	2,808,446	32	38	37	46	53
Florida	2,748,595	33	35	34	35	37
Washington (St. Louis)	2,730,258	34	34	32	27	27
Iowa	2,689,190	35	31	35	26	32
Southern California	2,585,475	36	36	44	41	41
Nebraska	2,488,608	37	40	46	49	50
Kansas	2,487,775	38	37	38	36	34
Mass. Institute of Tech.	2,479,262	39	41	41	37	35
Kentucky	2,389,962	40	39	39	44	42
Purdue	2,365,866	41	32	26	32	28
Rochester	2,330,000	42	43	42	43	38
Iowa State	2,219,712	43	45	48	54	57
Syracuse	2,168,581	44	44	45	39	39
Joint University	2,106,709	45	53	52	38	49
Utah	1,992,120	46	47	36	47	48
Brown	1,960,066	47	49	47	45	43
Missouri	1,947,561	48	42	43	42	40
Tennessee	1,942,970	49	50	29	28	31
Florida State	1,851,923	50	54	55	53	51
Johns Hopkins	1,840,308	51	46	49	48	44
Washington State	1,814,167	52	48	50	52	54
Oregon	1,696,452	53	52	51	51	47
Texas A & M	1,605,500	54	57	57	58	58
Louisiana State	1,587,215	55	51	53	50	46
Oklahoma	1,562,632	56	55	54	55	52
Cincinnati	1,561,158	57	56	56	56	56
Notre Dame	1,310,343	58	58	58	57	55